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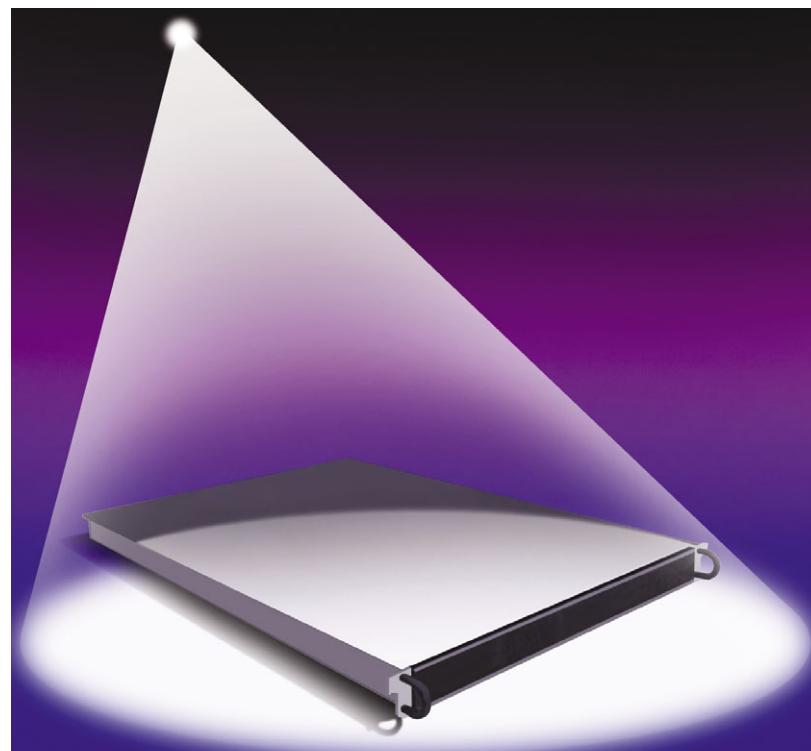
Blade Servers In The Limelight

Will They Take Over The Data Center?

by Elizabeth Millard

BECAUSE OF THEIR ABILITY to use up less space in a data center and improvements in cooling, blade servers have generated a great deal of buzz in the industry. Companies of every size, from behemoths to start-ups, have been testing the technology's capacity to see how it figures into current configurations and future plans.

Although blades haven't become the prevailing technology in data centers yet, adoption is at a steady pace, and early, unrealistic expectations have given way to solid predictions about the impact that blades could have and the role that they could take among other data center servers.



Speed Limit

Although some in the industry believe that blade adoption can get going at a good

clip, others think that there might be a bit of hype mixed in with the buying.

According to a survey of more than 70 companies done last year by market research firm TIP (TheInfoPro), early excitement about blade servers may have been premature, and unfulfilled expectations are limiting adoption. While many companies report installing and testing blades, widespread deployments are still on hold.

Roughly 35% of those interviewed see blades as unnecessary, and for those that did implement blades, about 30% expected to spend less in 2005 for blades than they did in 2004.

"Many users are clearly disappointed in blades' failure to deliver," notes Bob Gill, TIP's chief research officer. "Many expected to see improvements in server manageability, along with cost, energy, and space

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Your SME's Competitive Advantage

Getting The Most Out Of IT

by Sixto Ortiz Jr.

THERE IS NO DOUBT the IT revolution of the past couple of decades has resulted in tremendous increases in productivity. In many instances, companies who moved first to maximize productivity using technology were handsomely rewarded in the marketplace.

Businesses eager to capture the same rewards those prescient first movers enjoyed have for the most part fueled the modern computing revolution. Technology suppliers have capitalized on this by consistently promoting their products as key elements of business competitive advantage.

But now that many IT tech components are rapidly becoming commodities, the focus is shifting away from the pure acquisition of technology to the

manner in which technology is deployed and used. This means businesses large and small must realize that simply acquiring technology will not yield a competitive advantage in the marketplace.

The Commoditization Of IT

So what factors are contributing to the ongoing commoditization of information technology? Has IT become a victim of its own spectacular success? Is the spectacular inevitably doomed to become commonplace?

Steve Prentice, a distinguished analyst and chief of research at Gartner, points to various factors driving commoditization, including falling prices,

increasing volumes, and standardization, which all combine to "deliver an intensely competitive marketplace for technology components," he says. Also, Prentice points to business trends such as globalization and changing social trends such as the arrival of "digital natives" who drive technology adoption even further.

"This," says Prentice, "is pretty much a set of complementary pressures driving growth and commoditization and all working together in a virtuous spiral."

IT's Diminishing Returns

The ongoing commoditization of IT, propelled by its

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**Businesses large and small
must realize that simply
acquiring technology will not
yield a competitive advantage.**

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Server Trends

Increased use of blades. Higher power and cooling demands. Optimized density. Consolidation. We take a look at each of these trends related to the server market.

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■ **Aberdeen** released the Terazilla 24TB Aberdeen Stirling X632 storage backup server. ■ **AirDefense** released Mobile 4.0, the latest version of the company's security and wireless network-assessment application. ■ **Exabyte** released an LTO tape library for the entry-level market that comes with native Fibre Channel support. ■ **GizMac** is accepting preorders of its upcoming 25U XRackPro2 noise reduction server rack cabinet. ■ **McAfee** unveiled two new security risk management solutions: McAfee Foundstone Enterprise 5.0 and McAfee Preventsys Compliance Auditor and Risk Analyzer. ■ **MGE UPS SYSTEMS** introduced new power meter options that provide access to information such as real-time trends, averages, and demand metering in addition to raw data. ■ **MicroNet Technology** announced the Platinum NAS 3.0 with up to 3TB of network storage capacity. ■ **SEPATON** and **NeoScale Systems** announced a secure virtual tape library.

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1. What is the size of your company (how many employees)?

Less than 10 200 - 499
 10 - 99 500 - 999
 100 - 199 1,000+

3. What is your annual computer hardware/software purchasing budget?

\$0 - \$9,999 \$100,000 - \$249,999
 \$10,000 - \$24,999 \$250,000 - \$499,999
 \$25,000 - \$49,999 \$500,000 - \$999,000
 \$50,000 - \$99,999 \$1,000,000+

2. How often do you purchase computer hardware/software?

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 Bi-weekly Annually
 Monthly No Involvement

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- AUGUST -

TDWI World Conference
Summer 2006
August 20-25
San Diego, Calif.
www.tdwi.org

• • •
Business & Technology Solutions Show
August 22-23
Rosemont, Ill.
www.btshow.org

- SEPTEMBER -

Data Center World
September 10-13
Orlando, Fla.
www.datacenterworld.com

Visit Processor at Booth 512

• • •
HP Technology Forum 2006
September 17-21
Houston, Texas
www.hptechologyforum.com

• • •
COMMON Fall 2006 Conference
September 17-21
Miami Beach, Fla.
www.common.org/conferences/2006/fall/index.html

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Interop
September 18-22
New York, N.Y.
www.interop.com/newyork

Visit Processor at Booth 568

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IT Service Management Forum Conference & Expo
September 18-22
Salt Lake City, Utah
www.jupiterevents.com/itsmf/fall06

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Business Rules Symposium Series
September 19-20
Washington, D.C.
www.brainstorm-group.com

• • •
Enterprise Architecture Conference Series
September 19-20
Washington, D.C.
www.brainstorm-group.com

• • •
Government Technology Conference East 2006
September 25-28
Albany, N.Y.
www.govtech.net/gtc/index.php/GTCEast2006

• • •
Intel Developer Forum
September 26-28
San Francisco, Calif.
www.intel.com/idf

- OCTOBER -

IT Expo
October 3-4
Anchorage, Alaska
www.sourdough.net

• • •
Gartner Symposium/ITxpo
October 8-13
Orlando, Fla.
www.gartner.com

• • •
Internet Telephony Conference & Expo West
October 10-13
San Diego, Calif.
www.tmcnet.com/voip/conference

• • •
ASCDI Fall
October 18-21
Toronto, Canada
www.ascdi.com

• • •
Chicago ITEC 2006
October 18-19
Chicago, Ill.
www.goitec.com

• • •
InfoSecurity
October 23-25
New York, N.Y.
www.infosecurityevent.com

• • •
Data Center Decisions
October 25-26
Chicago, Ill.
www.datacenterdecisions.com

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Kansas City ITEC 2006
October 25-26
Kansas City, Kan.
www.goitec.com

MarketPlace NEWS



Brocade To Buy McData

IN A MOVE TO create a stronger force in the competitive Fibre Channel product field, Brocade Communications Systems is planning to acquire its chief rival McData for \$713 million in stock. Industry analysts say the deal will give Brocade about 70% of the market share, and it expects to save about \$100 million yearly, including savings in personnel expenses. After the acquisition, slated to close in January, McData will be a wholly owned subsidiary of Brocade. Both company boards have approved the deal, but it's still awaiting approval from the SEC and company shareholders.

Dell Recalls Notebook Batteries

AFTER REPORTS OF OVERHEATING BATTERIES causing damage to personal belongings, Dell has decided to recall more than 4 million notebook batteries because they reportedly can cause smoke and catch fire. The lithium-ion batteries were made by Sony. The batteries were sold with Dell Latitude, Inspiron, XPS, and Precision Mobile Workstation notebooks. The batteries were shipped between April 1, 2004, and July 18, 2006. The battery will have the word Dell printed on the back and indicate it was made in China or Japan. For a list of specific notebook and battery model numbers involved in the recall, visit www.dellbatteryprogram.com.

3Com Names New CEO

AFTER ONLY EIGHT months on the job, 3Com CEO and president Scott Murray has resigned from the company. Edgar Masri, current COO of Redline Communications and a former 3Com business unit executive, will become the company's new CEO and president. 3Com is trying to increase its 51% stake in China's Huawei and plans to purchase some of its partner's shares beginning Nov. 15. In his resignation, Murray cited his young family and his inability to commit to spending extended time in China to make the increased ownership in Huawei a success.

IBM Acquires FileNet

MARKING THE COMPANY'S largest software purchase in three years, IBM plans to acquire FileNet, a content and document management software maker, for \$1.6 billion. IBM expects the deal, slated to close in the fourth quarter, to double its share of the content management market and push the company past its rival Documentum (which EMC acquired three years ago), the current leader in the industry. Analysts say IBM's purchase of FileNet will put pressure on its database rival Oracle to make an acquisition of its own to stay competitive.

BlackBerry Security Threat Discovered

RESEARCHER Jesse D'Aguanno says he has created what could possibly be the first malicious program targeted toward the BlackBerry. The program, called BBProxy, can be installed on a BlackBerry or sent as an email attachment. Once installed, BBProxy could let an attacker enter the network a BlackBerry device connects to, making it possible for someone to install malicious programs on the network or discover confidential information. Security

experts at Secure Computing say enterprises should take some common-sense approaches to combat the threat: Isolate Internet-facing servers such as those used for BlackBerry service, disallow arbitrary connections to the network, and remind users to use caution when opening attachments or downloading messages.

Google Spending To Outgrow Revenue

IN ITS LATEST QUARTERLY financial report, Google indicated its 2006 spending on property, equipment, and employee compensation "will be substantially greater than the annual rate of growth of our revenues." Google says it will reward employees with more cash compensation as opposed to stock options. In addition, it's working on building new data centers to keep up with traffic acquisition and, as a result, increased demand for the services the company provides.

Sprint Makes A WiMAX Investment

DURING THE NEXT two years, Sprint Nextel will spend up to \$3 billion to create a high-speed wireless data network that utilizes WiMAX technology. The network, which will be developed in conjunction with Motorola, Samsung Electronics, and Intel, will cover entire cities and offer services that include Internet access and video downloads. Trial markets will begin receiving service by the end of next year with coverage expected to reach as many as 100 million people by 2008. Unlike the popular Wi-Fi wireless standard, WiMAX is a high-speed wireless connection that can span miles.

Cisco Fiscal Q4 Sales & Income Rise

INTERNET NETWORKING giant Cisco saw better-than-expected figures for its fiscal fourth quarter that ended July 29. Cisco's net sales for the same quarter last year were \$6.6 billion, while this year's sales topped out at \$7.98 billion, up from last quarter's \$7.3 billion. The company's net income for the quarter was \$1.544 billion, or 25 cents per share, up from \$1.54 billion, or 24 cents a share, last year. The majority of Cisco's revenue stems from its network equipment for telecommunications and business networks.

SME Sales Strong For Trend Micro

TOKYO-BASED security vendor Trend Micro reported strong growth in its SME market in North America. The company's Q2 revenue is

up 17%, although its operating income dropped 2% from the same period last year. The company posted net income of \$26.5 million, operating income of \$46.8 million, and net sales of \$175 million for the quarter. Year-over-year, its revenue increased 18%, which was largely driven by increased sales of SME solutions.

Google & U.C. Partner To Digitize Books

THE UNIVERSITY OF CALIFORNIA has signed on to become a partner in Google's library book scanning project. Since last year, Google has been busy scanning books, both from the public domain and copyrighted, from several university collections. Google's goal is to scan, digitize, and make the books searchable via the Internet. As part of the deal with U.C., a copy of all scanned books will be kept by Google, as well as by U.C. The University of California is also currently digitizing books in connection with the Open Content Alliance, which is an effort by the nonprofit Internet Alliance, Yahoo!, and Microsoft.

Hackers Prowling For Unpatched PCs

USING EXPLOIT CODE, hackers are looking to take advantage of a flaw in Windows involving Windows Server, which is used for file sharing and printing. The flaw prompted the U.S. government to issue a special warning last week. In response, Microsoft issued patch MS06-040 on Aug. 8 for several of its Windows OSes. According to Microsoft, the current exploit code only affects Win2000 systems without the patch, and the related malware (Win32/Graweg) has had little impact on customers.

Q2 Chip Surplus

ACCORDING TO market research firm iSuppli, the second quarter saw a spike in semiconductor inventories, especially Intel chips. The worldwide supply chain's chip inventories rose substantially higher than analysts in the industry predicted they would, topping out at nearly \$2 billion—almost twice as high as Q1's chip inventories. iSuppli says Intel's chip surplus from the first quarter carried over to Q2 and even worsened as it competed with rival Advanced Micro Devices in a price war. iSuppli forecasts overall chip inventories will decrease in Q3, although Intel's excess inventory will likely carry over to next year.

WATCH THE STOCKS

This information provides a quick glimpse of current and historical stock prices and trends for 16 major companies in the technology market.

Company	Symbol	Year Ago	August 7 \$	August 14 \$	% change from previous week
Avaya	AV	\$9.60	\$9.15	\$9.23	▲ 0.87%
BEA Systems	BEAS	\$9.43	\$10.91	\$11.38	▲ 4.31%
Computer Associates	CA	\$26.92	\$21.72	\$21.77	▲ 0.23%
Cisco Systems	CSCO	\$19.61	\$17.38	\$20.09	▲ 15.59%
Dell	DELL	\$39.88	\$22.01	\$21.24	▼ 3.5%
Electronic Data Systems	EDS	\$22.39	\$23.55	\$23.16	▼ 1.66%
Google	GOOG	\$291.57	\$376.15	\$369.43	▼ 1.79%
HP	HPQ	\$24.14	\$32.72	\$33.29	▲ 1.74%
IBM	IBM	\$83.50	\$75.39	\$76.68	▲ 1.71%
Intel	INTC	\$26.90	\$17.30	\$17.87	▲ 3.29%
McAfee	MFE	\$28.87	\$20.54	\$19.80	▼ 3.6%
Microsoft	MSFT	\$27.35	\$24.26	\$24.53	▲ 1.11%
Oracle	ORCL	\$13.36	\$14.60	\$15.29	▲ 4.73%
Red Hat Software	RHAT	\$14.24	\$22.27	\$22.92	▲ 2.92%
Sun Microsystems	SUNW	\$3.71	\$4.61	\$4.50	▼ 2.39%
Symantec	SYMC	\$21.98	\$17.14	\$17.74	▲ 3.5%

NOTE: This information is meant for reference only and should not be used as a basis for buy/sell decisions.

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Security Assessment Services

Knowing Where You Are Vulnerable

by Sandra Kay Miller

AS MALICIOUS ATTACKS rise rapidly in both complexity and frequency, enterprises have been forced to take steps to guarantee a strong network security posture. One of the ways they accomplish this is by conducting regular security assessments.

However, security assessments are no longer just a way to protect organizations from threats. They are also justifications for IT purchases such as firewalls, virtual private networks, intrusion detection/prevention systems, antivirus software, and access control solutions.

Security assessments also fulfill audit requirements for regulatory compliance edicts, such as Sarbox, Gramm-Leach-Bliley, and HIPAA, by benchmarking enterprises' network and data security.

Now that security has risen to the C-level in the enterprise, assessments have become a core function for organizations in order to ensure business continuity.

"Over the years we've definitely seen vulnerability assessment change from a one-off activity that would happen once a year to it now becoming a weekly, if not daily, activity," says Mike Puterbaugh, vice president of marketing for eEye Digital Security, a privately held company that provides vulnerability assessment solutions to more than 8,500 corporate and government

organizations worldwide, including EDS, Citicorp, Continental Airlines, Dow Jones, Prudential, and the Department of Defense.

Forrester Research found that security assessment and planning was among the top three consulting services SMEs purchased last year.

According to the eEye Digital Security Web site, "IDC sees vulnerability assessment as one of the most important components in creating a strong-layered security infrastructure." In addition, Yankee Group predicted as early as 2001 that the MSSP (Managed Security Service Provider) market, which often includes security assessment services, would reach \$2.6 billion dollars by 2005.

SNAPSHOT

eBiz Datacom Security Consulting

Services conduct security risk assessments to locate weaknesses and then offer and implement recommendations addressing specific security concerns

www.Processor.com/eBiz6

Phil Salemi, president of Waterloo Systems, which offers subscriptions for a real-time security intelligence service, attributes a number of factors driving the security assessment market: the demand for compliance, the increasing pace of security threats, and the difficulties and costs associated with in-house security personnel. Salemi predicts the competition for the SME space will comprise the most growth; thus, there will be as much opportunity for small providers to profit as

Buying Tips

Mike Puterbaugh, vice president of marketing at eEye Digital Security, shares the selection criteria organizations should be looking for when making an investment in security assessment services and products.

- Have a very accurate record of what's on your network and be sure that the services/products will be able to operate with all your assets, including routers, switches, hubs, and printers, as well as servers, workstations, and remote systems.
- Verify that your choice is able to identify configuration errors, as well as typical security issues such as software vulnerabilities.
- Realize that every organization is unique. Make certain your choice includes the ability to be customized to fit your organization's specific situations.
- Audits should never use exploit code as a means of detecting vulnerabilities during security assessments.
- Administrative rights to each asset should not be required in order to perform a security assessment. This is especially important in large, distributed environments.
- Look for integration points into larger systems management products such as OpenView, Tivoli, Remedy, Patrol, Unicenter, etc.

traditional large security vendors and big consulting firms.

Professional Services

The VeriSign Security Risk Profiling Service (www.verisign.com) enables a comprehensive risk management approach that evaluates business assets, identifies likely attack sources and paths, and provides a business view of threats and vulnerabilities, all while addressing compliance requirements affecting the industry today.

VeriSign offers a variety of Managed Security Services, including the Security Risk Profiling Service that takes an in-depth look at threats, vulnerabilities, network access policies, and financial

Originally founded in 1998 as a security research group, eEye Digital Security (www.eeye.com) introduced the Retina Network Security Scanner in 2000 that has gone on to be one of the most widely installed products throughout the world performing security assessments on government and corporate networks.

Retina is capable of scanning an entire Class C network in less than 15 minutes to identify all operating systems, networked devices, and custom applications, along with any vulnerability associated with them. Two of the main advantages Retina has over other products in the security scanner space are that it doesn't require administrative rights to scan an asset, and it does not use exploit code to test for vulnerabilities.

"Using exploit code for vulnerability assessments is like throwing a rock at your car's windshield to prove that it will break," says Puterbaugh.

The software-based Retina product leverages the expertise of eEye's Security Research Team that has repeatedly identified critical flaws such as those with Microsoft's Windows RPC and, most recently, the remote code execution flaw in McAfee's ePolicy Orchestrator.

No discussion on security assessment would be complete without mentioning the freely available open-source vulnerability scanning software, Nessus (www.nessus.org). Yankee Group senior analyst Andrew Jaquith notes, "Every security assessment nerd worth his salt knows what Nessus is."

Even Puterbaugh at eEye suggests using Nessus as a secondary backup to his company's scanner, Retina.

Jaquith suggests that organizations without an active security

SNAPSHOT

Internet Security Systems Professional Security Services

Offer comprehensive, enterprise-wide security assessments, as well as design and deployment services, to help organizations create effective network security solutions through implementing network security best practices

www.Processor.com/ISS

assessment program in place should start with Nessus before moving on to a commercial product or professional services.

Nessus' strength lies in its application-level vulnerability testing for common exploits. This is accomplished by using a port scanner to initially identify the operating system and available services. When a possible security flaw is found, Nessus conducts a series of tests written in the Nessus Attack Scripting Language, which ultimately generates a report listing known vulnerabilities such as missing patches and susceptibility to buffer overflows.

Although the Nessus Project began in 1998 by Renaud Deraison as an open-source project, in 2002 Renaud co-founded Tenable Network Security, a privately held company that is the owner, sole

developer, and licensor for the Nessus source code, the Nessus trademark, and the nessus.org domain. While Nessus is still free (registration is required, though), it is a key component in Tenable's

SNAPSHOT

eEye Digital Retina Security Scanner

Identifies known network security vulnerabilities and assists in prioritizing threats for remediation through nonintrusive scanning; users are able to secure their networks against even the most recent of discovered vulnerabilities

www.Processor.com/eEye

commercial enterprise network vulnerability assessments products.

Independent Consultants

Many organizations turn to consultants, as specialists in their field, to provide an independent opinion. Security assessment is no stranger to this practice. Although there are numerous security certifications currently available, the NSA (National Security Agency) sponsors the IAM (INFOSEC Assessment Methodology) certification.

The IAM sets a standardized baseline of activities required for security assessments. These include 18 baseline INFOSEC categories, an assessment plan, an information criticality analysis, document reviews, system analysis, personnel interviews, written reports, and customer out-briefings.

A list of certified individuals can be found on the INFOSEC Assurance Training and Rating Program Web site (www.iatrp.com).

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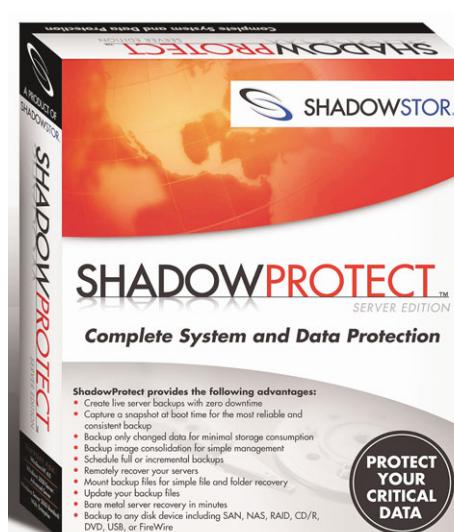
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Power Up & Cool Down

Expert Advice On Coping With Today's Power & Cooling Needs

by David Garrett

POWER IS A FUNNY THING. Often, the more you have, the more you need. And the more you need, the more problems you're bound to encounter.

It's certainly true for data centers. The power demands of today's equipment—and above all, densely packed blades, which make cooling a nightmare—have risen steeply. And the problem is heating up as the price of energy soars.

Use What You've Got

According to Joe Winkler of Midwest Computer Products, which offers a wide array of data center services, many data centers

don't use the cooling power they already have. "That's because equipment has been moved around, racks aren't positioned correctly, and any number of reasons why, over the years, the data center has lost its cooling efficiency," he says. It's especially true if the data center hasn't been remodeled in years.

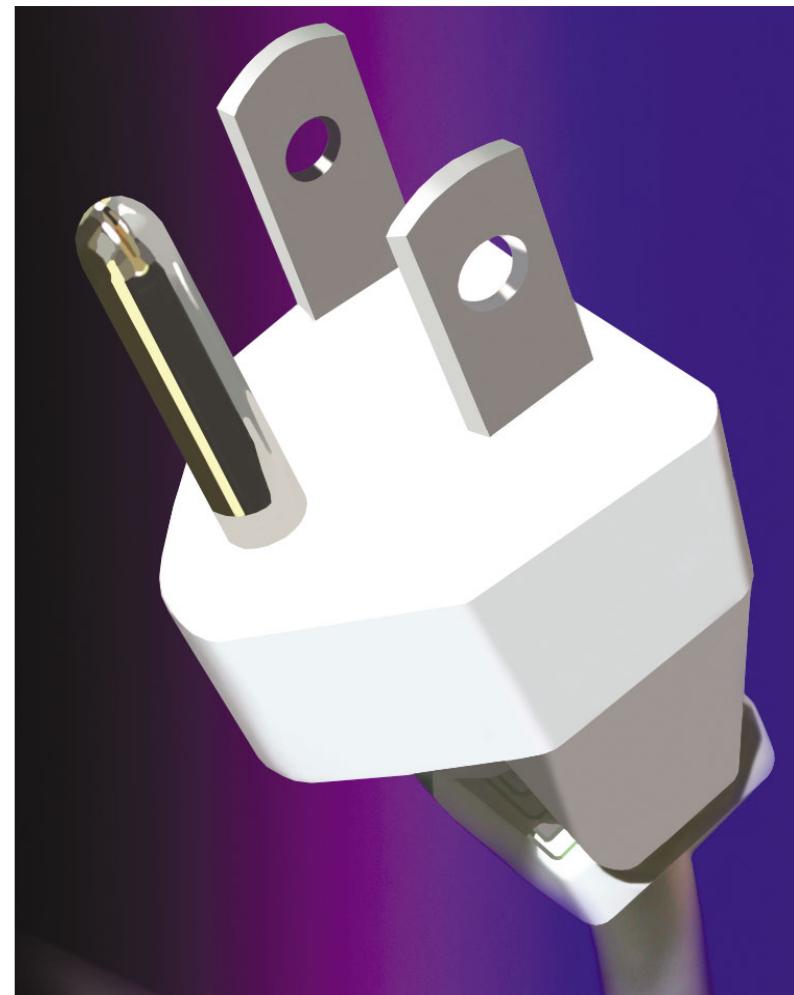
For instance, old, tangled cables in the plenum can impede airflow if they're not discarded. Even cables in the racks can add heat if they're too loose. "Those are the housecleaning chores that most data centers can easily do but don't bother doing because it's time consuming," says Winkler. "It might require moving racks or binding and bundling the cables. It's really grunt work."

Precision cooling can also help you chill out. Products such as the SubZero from Technology Connection (www.technology-connection.com; see the "Hot Products" chart for details) work in tandem with CFD, or computational fluid dynamics, to predict thermal problems and hot spots. Subfloor cubes are then placed in the plenum to redirect airflows and lower the temperature exactly where needed.

Water In The Racks?

Densely packed blades add computing power, but they also add heat. Tons of it.

"When you do a blade application," says Mike Hagan, senior vice president of Lee Technologies, "you're adding four to five times the power requirements in what amounts to the same footprint."



Lee Technologies maintains data centers for such luminaries as BellSouth, Boeing, Motorola, and Sprint and deals constantly with cooling and power issues. "First," says Hagan, "you've got to buy a lot more air conditioning and a lot more UPS power. And the other operational challenge is, where do I put it all? Where do I put all the new infrastructure to support these racks?"

If you're a big-name firm with buildings to spare, finding room for an extra UPS won't make you quiver. But if your data center is already packed to the gills, more space can be tricky. Hagan says the crunch has led enterprises to consider new, inventive methods of cooling their equipment: "The question becomes, do I use conventional cooling methods for these racks, and how much cooling can I accomplish that way?"

If you do go the conventional route, you can purchase racks with modified fans that direct air more efficiently. Lee Technologies is also a reseller of novel solutions such as the Sanmina ECOBAY (www.sci.com), which combines air and water cooling in the rack itself, removing the need for plenum cooling or hot and cold aisles. (For more information, see the "Hot Products" chart.)

Of course, using water to cool servers leaves some data center owners all wet. "They're petrified

Go to Page 11

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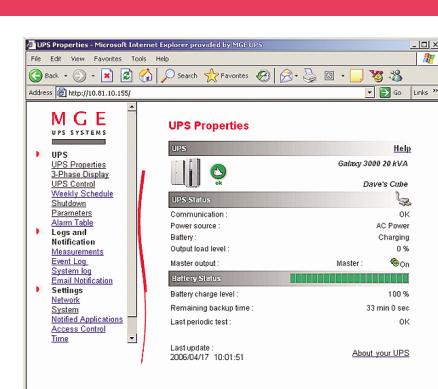
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This new release of Enterprise Power Manager addresses the

special needs of complex three-phase power systems, with the ability to draw any type of power architecture, with multiple levels of redundancy, and view the actual power flows on the GUI.

Accessible from the Internet and any workstation using a standard Web browser, users can click a UPS in the presented diagram to obtain detailed information about the operating and configuration parameters in a dedicated window. Enterprise Power Manager uses Secure Sockets Layer (SSL) encryption along with several levels of passwords for complete security. In the event of a power emergency, alarms are centralized and transmitted by email or through Short Message Service (SMS). The systems' real-time logging of events and operations helps users to conduct preventive maintenance of their various UPSes.



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Blade Servers In The Limelight

Continued from Page 1

savings, and today's blades just aren't delivering those benefits across a range of configurations."

As companies wait to implement blades extensively, analysts are trying to look at the market with more realistic expectations. Most notably, IDC adjusted its early estimates—in 2001, when blades were first introduced, the research firm believed that sales would reach \$4.5 billion by 2005 but quickly changed its prediction when it saw that sales would actually be closer to \$2.5 billion.

IDC does note that despite its revamped estimates, it sees implementations increasing in the future. In a report from April, IDC analysts stated that mainstream adoption of blades will continue to speed up during the next few years and that in the end blades will surpass rack-optimized servers in achieving faster and greater success in landing in the enterprise market.

But to say that it's just a matter of time before only blades are employed in a data center is a bit extreme, notes Vikram Mehta, president and CEO of Blade Network Technologies. He anticipates that there will

be greater adoption in the next few years but that blades will fit in with other servers rather than replace them all outright. "We expect

IDC notes that some server vendors have reported that blades are the fastest growing product line in their companies.

that by the turn of the decade, at least 30 to 35% of all servers will be blades," he says.

Adoption Office

Although adoption may not match up to very early estimates, many companies are finding that including blades in their data centers has a number of advantages, and that's driving the current adoption rate.

IDC notes that some server vendors have reported that blades are the fastest growing product line in their companies. Within just the past few years, blades have improved in terms of affordability, reliability, and serviceability. They've also gotten easier to manage and become more suitable for clusters, virtualization, and consolidation. Also important is that vendors are making the systems more capable of supporting different business applications, something they didn't handle so well in the past.

The implementation of just one or two blade servers can greatly enhance a company's data center, notes Mehta. Despite the company's focus, Blade Network Technologies actually hesitated to put only blades in its data center. After a financial analysis of how much the architecture could save the company, it finally decided to run the entire IT shop on blades, with two professionals dedicated to blade support. "One of the biggest benefits for us is that we can consolidate everything onto a very simple blade platform," says Mehta.

Also attractive was the ability to centralize management easily, adds the company's director of product marketing, Tim

Shaughnessy. "Because of the way it's configured, you can have another server up and running in 15 minutes if you need to add one," he says.

As companies do similar case studies, in which they look closely at TCO, it's likely that adoption will continue at a steady pace, Mehta says. So although the servers may have inspired some premature buzz in the past, going forward it looks like it's the reality of gradual implementations, not the hype of potential benefits, that will drive blade purchasing. □

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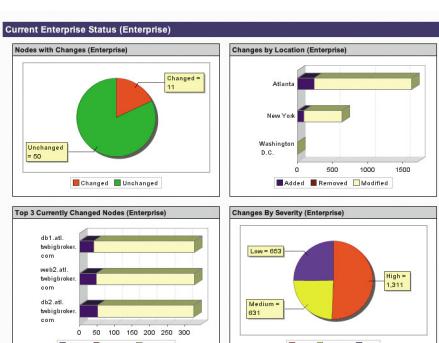
Manufacturer	Product	Description	URL
BladeFusion	BladeFusion OE	Middleware that delivers highly available network application services and enables rapid deployment and unified management	www.bladefusion.com
ClearCube	PC Blade	Intel-based computers that deliver full PC functionality; blades are compact and house all standard PC components	www.clearcube.com
Verari Systems	BladeRack 2	Blade server platform that provides reliable and scalable density; comes standard with integrated cluster management and centralized management	www.verari.com

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Addlogix SnapShot Disaster Recovery Software

What is Addlogix SnapShot:

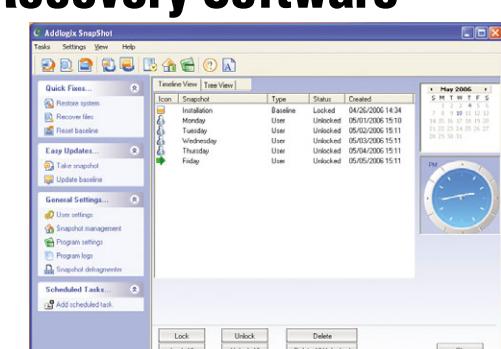
It is the most powerful and most complete computer system and data maintenance software. It allows computer users to easily and quickly fix their computer. It can recover lost and/or corrupted files or restore an entirely crashed system to a stable working state in seconds.

How it Works:

Addlogix SnapShot allows users to create "snapshots" (maps of the hard disk sectors and the maps' indexing system) of the computer system and data at different times. Users can then select a specific snapshot to recover files or restore the entire system to. Theoretically, Addlogix SnapShot only takes 0.07% total hard disk space to create all the snapshots. However, each snapshot might contain different amount of user data; therefore each snapshot size might differ.

Selective Data Recovery: Addlogix SnapShot offers a unique feature that allows users to preserve or transfer files and data in the current snapshot to another snapshot during a restore process, and therefore not lose any data during the process. For example, users can create a snapshot of the current system before restoring to a selected snapshot. Or users can restore the system with the Advanced Data Synchronization option, which allows users to manually select the files they want to be transferred to the restored snapshot.

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Your SME's Competitive Advantage

Continued from Page 1

tremendous marketplace adoption, has resulted in the reduction of IT's importance as a source of competitive advantage. At first glance this seems like a surprising result, but further analysis reveals it makes perfect economic sense.

Nicholas Carr, author of "Does IT Matter? Information Technology and the Corrosion of Competitive Advantage," points out that as resources become commoditized, they lose their power to create advantage. And this is what is happening with IT. "It's an essential business resource, but it has become strategically inert," says Carr.

The first company in the marketplace to purchase and deploy a CRM system will gain significant advantage, but as others do the same, the advantage delivered by such a system diminishes as the technology becomes commoditized and the technological playing field is leveled.

"Competitive advantage," says Carr, "comes from having something your rivals can't match." If everyone else has the same technology, its potential to provide competitive advantage is dramatically reduced.

Gartner's Prentice says technological innovation is not the only form of innovation that occurs. Prentice says economists describe the long-term growth of technology in 50- to 60-year cycles. These cycles begin with a first phase of rapid technological innovation, followed by a second phase that, says Prentice, is not so much about technological innovation as it is about "new ways to apply existing (underutilized) technologies to existing unresolved issues."

A New Way

And therein lies the rub: If long-term technological growth is cyclical, then IT is

entering a new age where the acquisition of new technological components may not be as important as the manner in which businesses position and use those components to solve problems.

"If you're going to get an advantage from IT," says Carr, "it's going to be through managing it better than your competitors—reducing its cost, increasing its flexibility, tempering its risk—rather than through technological innovation."

In other words, businesses should focus on the base hits instead of constantly trying to find the next technological home run. For example, are data center resources utilized to their fullest capacity? Is the administration of patches and upgrades a labor-intensive exercise that ties up scarce resources? Is the servicing and maintenance of a user-installed base of desktops, laptops, and other mobile devices becoming an administrative nightmare?

Figuring out how to maximize utilization of the technology they already have is a practical way for businesses to gain competitive advantage. And there are many tools available today designed to ease administrative and management headaches.

Improving the management of IT, says Carr, may require investing in new technologies, such as virtualization for asset consolidation. But, he adds, "the resulting advantage stems from the improved efficiency in the use of IT itself, not from some new capability that IT provides."

Virtualization is indeed an example of a practical technology that can help businesses improve the utilization of IT resources and gain competitive advantage by driving down internal costs. Virtualization leads to asset consolidation, which leads to the elimination of underutilized assets and yields cost savings that impact the bottom line.

Gartner's Prentice says this second phase of the IT technology growth wave is really all about process innovation: how businesses use the new tools at their disposal to do things better, faster, cheaper, or just plain different. "Get this right," says

Prentice, "and you can get huge competitive advantage."

Carr says companies should not think in terms of gaining an advantage from IT. Instead, he says, "companies should look to consolidate and standardize IT assets and to offload those assets—hardware and software alike—onto outside utility providers whenever it makes economic sense."

Another practical way businesses can capture competitive advantage is by exploiting outsourcing relationships. Why should a business acquire the personnel and expertise to manage security when it can easily outsource those tasks to managed security services providers who are security experts? The same goes for a myriad of IT services that are not core business functions but are still necessary. Businesses should take a long, hard look at the various IT tasks that must be performed and outsource those that are not core competencies.

Beyond Technology

There are some key morals to this story: First, business focus must shift away from acquiring technology to managing technology and maximizing the efficiency of what they already have. Also, businesses should strive to focus on core competencies and, where possible, outsource noncore but necessary tasks to service providers. Commoditization is rapidly eroding technology's innate source of competitive advantage. The low-hanging fruit—just buy it and deploy it, and marketplace success will come—has largely been picked.

Now the game will truly get interesting as the bar to business success is raised beyond the acquisition of technology to the effective and strategically sound deployment of all business assets. Successfully riding this part of the technology wave will be a bit more difficult. □

Enterprise Personality Dimensions

To gain competitive advantage, companies should have an idea of their personality profile. Gartner's EPP (Enterprise Personality Profile) defines companies along six dimensions. In turn, each of those dimensions is defined by descriptors that describe how the company views itself along that dimension. For example, a company with low risk tolerance in the technology dimension may not be willing to gamble when it comes to the acquisition of new or untried technologies.



SOURCE: GARTNER (NOVEMBER 2005)

Power Up & Cool Down

Continued from Page 9

about water in their data center space," says Hagan. "But the reality is there's been water in the data center forever. In the '80s, IBM mainframes were all cooled by water pumped under the floor." And A/C units also carry water near servers. So as long as the system is well-designed and controlled, says Hagan, it's perfectly safe.

Better Than Batteries

Sometimes you have to move your power equipment right out of the data center. If so, products, such as Pentadyne's Flywheel Technology (www.pentadyne.com), which replace the lead-acid batteries in a UPS, can help. Not only is a Flywheel a source of clean energy, but it's far less sensitive to heat, so you can move

the UPS out of the data center and into a closet down the hall or even store it outside in a container to protect it from the elements.

The result? More white space in your data center, which translates to more airflow and less

6-square-foot space. That's probably a four-times improvement in power density over lead-acid batteries," says Frank DeLattre of Pentadyne.

But new equipment—no matter how inventive—may not be

If your data center is already packed to the gills, finding more space for an extra UPS can be tricky.

cooling. "With our particular device, we have a building block of 190kW, which fits into a

enough to save power. The answer may lie in the type of power itself. Pentadyne and Sun

Microsystems have launched the nation's first DC-powered data center at Sun's Silicon Valley campus. By removing the need to convert DC to AC, and to further convert AC from 480 to 208 volts (the standard for most data center equipment), pure DC current can save up to 20% on energy costs. It may even reduce the heat in server racks by as much as 40%.

Of course, DC in the data center is a long way from the mainstream. But it's still something to watch. Even with fall quickly approaching, there's a heat wave in many data centers, and it's here to stay. □

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Density Dilemma

How Manufacturers Overcome Hurdles When Optimizing Server Density

by Christian Perry

• • •

AS THE PREMIUM for space on data center floors skyrockets, the demand for servers that can deliver top-rate performance with minimal physical impact is greater than ever. But the quest to optimize server density brings a unique set of challenges that manufacturers are attacking with steadfast determination. If you think that heat and power concerns are slowing contestants in the density race, think again.

While huge enterprises often encounter trouble actually filling their data centers, small and midsized enterprises face the exact opposite situation. But by increasing server density, manufacturers are allowing SMEs to squeeze more components into that valuable real estate.

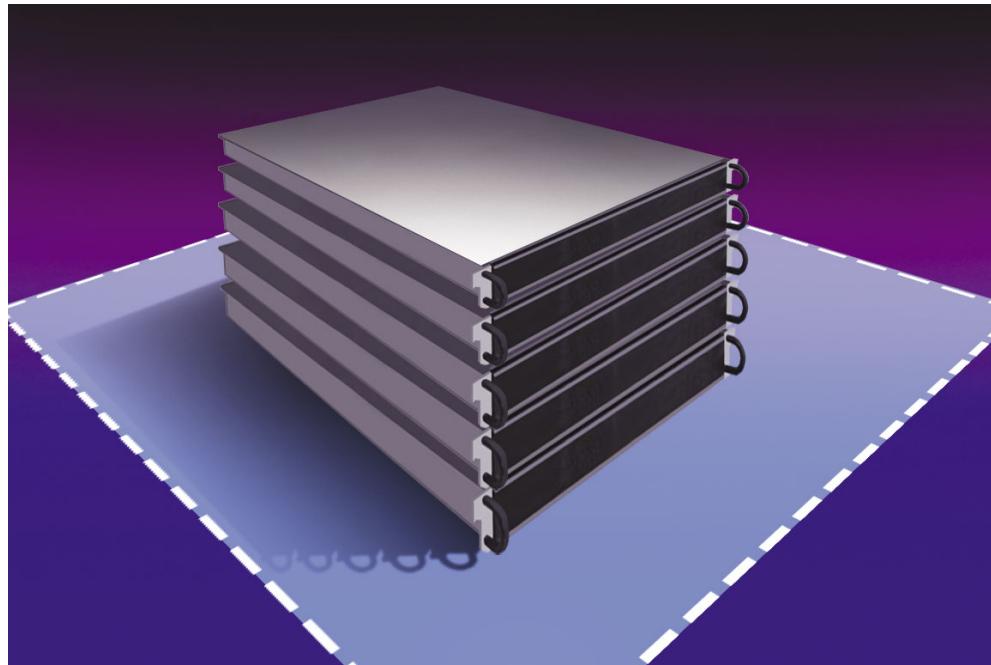
"The primary benefit is the positive environmental impact it can have on facilities utilizing the increases," says Mark Feverston, director of enterprise servers and storage for Unisys. "The environmental impact includes features such as fewer square feet of space required and reduced facility setup requirements [such as power], which in turn allow for the reduction of the operating costs overall."

But increased density doesn't come without drawbacks. As the number of servers in the same footprint increases, heat and power draw naturally rise, creating problems for companies that didn't adequately prepare for the denser equipment. Further, there's another concern that many companies don't factor in. "In addition to heat and power concerns, concentrating more processing power in a smaller space means increased weight," says Denny Lane, director of product management at Stratus Technologies. "In some locations, this may have implications for structural integrity of the computer room.

Increased weight also means that physical handling and moving are more difficult, which may have OSHA implications."

Half Depth, Full Cooling

To address the delicate balance between performance, heat, and power, manufacturers



are devising unique methods to handle these concerns. The results are not only effective, but some are even placing rackmount servers in the same density ballpark as blades.

"We pack twice as many systems into the same footprint by mounting half-depth servers and storage back-to-back," says Giovanni Coglito, founder and CTO of Rackable Systems. "Our competitors generally push their bladed solutions as having [the] highest density, but we are able to offer density levels equivalent to—or higher than—standard blades with our rackmount systems."

Using its half-depth form factor, Rackable can, for example, squeeze 80 systems in a cabinet—the equivalent of 320 processing cores—and still have 8U of space remaining for networking gear. Although such an implementation is apt to conjure visions of a cooling nightmare, Coglito explains that by mounting servers back to back, Rackable can eliminate the traditional hot/cold aisle configuration typically used in data centers to deal with hot air. In the back-to-back model, heat

is evacuated through a chimney, or plenum, in the center of the cabinet and then is routed directly to existing HVAC returns.

Design Is Key

Without careful server design, manufacturers are bound to create servers that burden customers with excessive heat and massive power draw. Says Stratus' Lane: "By matching the intended workload of the server with the optimum processor power and speed—i.e., not over-designing—environmental considerations are more easily

managed. There comes a point, however, that fundamental system design changes may be needed to accommodate higher temperatures. We are anticipating this in future model designs, [which could include] the possibility of liquid cooling."

On the power side of the equation, Rackable relies on DC power to alleviate the power constraints experienced by many density-driven data centers. "By reducing the amount of power consumption at the server level and the cabinet level, customers are able to power a fully populated cabinet of systems within their existing AC-based infrastructure," Coglito says. "Our DC power solutions enable customers to save as much as 30% on their monthly power consumption."

The Density Advantage

According to Feverston, the challenge isn't determining how many servers can fit on the head of a pin but instead determining how much work can be done with a given amount of resources. He says that this approach benefits scale-up vendors, which use virtual and hard partitioning along with sophisticated management tools to make use of underutilized resources. Those same resources can then be shared among applications when needed.

But while Feverston says rack density is appealing primarily because of its simplicity of implementation—and not necessarily for optimizing ROI—server manufacturers continue to boost density levels to unprecedented levels, and for many companies, it's tough to ignore the power inherent in such builds.

"Higher density enables a data center to achieve greater compute power in a smaller space," Coglito says. "Data center administrators today are simultaneously faced with pressure to increase compute power while working within tighter operations budgets, so being able to pack more servers into a smaller footprint naturally is an important strategic advantage." □

A Sampling Of High-Density Servers

Manufacturer	Product	Description	URL
Aberdeen	Stonehaven 1U Servers	Dual-core AMD Opteron servers with redundant power and up to 2TB of storage capacity	www.aberdeeninc.com
Rackable Systems	Foundation Series	Half-depth form factor allows back-to-back mounting for high density levels	www.rackable.com
RackLogic Technologies	Razerv	Lineup features a 9-inch model that weighs 7 pounds when fully configured	www.racklogic.com
Stratus Technologies	ftServer Family	Includes Stratus' Continuous Processing, featuring lockstep technology, failsafe software, and the ActiveService architecture	www.stratus.com

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Rackable Systems Scale Out Series Servers
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What's New In Release 5.5 EA:

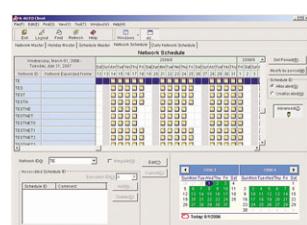
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It's A Virtual World

Server Consolidation For The SME

by Chris Jackson

IT MANAGERS HAVE a tough job: provide the essential services required for their companies, yet control and contain costs. As these essential services grow, virtualization as a server consolidation strategy has found increasing favor as a means of increasing reliability, scalability, and manageability while reducing the number of physical servers required to deliver these essential services. According to Robert Bradman, senior system engineer at Vente, "Once you go virtual, you will never want to deal with real servers again."

Virtualization In A Nutshell

For many SMEs, the prevalent model for server deployment is a large number of servers (each tasked with limited responsibilities), Web servers, DNS servers, etc. The original impetus for allocating services among individual servers was due to application incompatibility and the desire for redundancy. The result was a sea of servers overpowered for their tasks and underutilized. For IT, it

meant lots of hardware to deploy, cool, and maintain.

Virtualization attempts to turn this model upside down. Products such as ESX Server from VMware (www.vmware.com), Xen from the University of Cambridge (www.cl.cam.ac.uk/Research/SRG/netos/xen), and Microsoft Virtual Server (www.microsoft.com) allow multiple VMs (virtual machines) to run concurrently on a host server.

Each VM runs its own operating system and its own applications isolated from the other VMs on the host server. As far as the VM is concerned, it's simply a discreet computer, no different than any other on the network. From the host server's perspective, each VM is an application that can be stopped, started, copied (cloned), or migrated to a new server.

Virtualization Benefits

Determining how many VMs you can run on a host server depends on the host server's hardware and the requirements of each VM. It's not unusual to run from 10 to 50 VMs on a single host



server, assuming it's provisioned with enough memory and has an adequate number of CPUs to provide virtualized computing power to the VMs.

One of the more popular servers used as a host is HP's DL585 series (www.hp.com). Provisioned with four dual-core Opteron CPUs and stocked with 16GB of RAM, the DL585 can easily host

between eight and 16 VMs, with each having the equivalent of a 1 to 2GHz processor and 1GB of memory. Comparing this 4U server to the 16U of rack space required for standalone servers, the data center savings become readily apparent.

Savings can accrue quickly, according to Bradman: "Virtualization has saved us tens of thousands of dollars in the first few months alone." Not only does virtualization help minimize rack space requirements, it also lowers electricity consumption and the corresponding amount of cooling required.

Migration Techniques

If you need to migrate existing servers to a VM infrastructure (as opposed to creating virgin VMs), tools such as VMware's P2V (physical-to-virtual) Assistant are essential. Simply boot the legacy server with the P2V CD, and it will copy the legacy operating system and applications into a VM hosted on an ESX Server.

Redundancy & Disaster Recovery

In addition to reducing costs, virtualization can also improve the reliability and survivability of key services for the SME. "In June our uptime was 100%. VMware's product has their

VMotion technology, which allows us to move live, running VMs to new physical hardware without interrupting the guest operating system, its network connections, or processes," Bradman says. VMware also offers a high-availability service that can detect when a VM (or host server) has failed and seamlessly start a second VM on a different server.

The impact on disaster recovery is similarly impressive. If your data center becomes inoperable, VMs are much easier to deploy to secondary facilities because the host server abstracts the hardware layer. For example, a host server running ESX on an HP dual-processor server can run a VM initially deployed to an eight-CPU Dell PowerEdge (www.dell.com). No longer does your IT staff have to worry about the appropriate drivers or hardware components for each individual server. Simply install your backup copies of each VM into your secondary facility, and you're back in business.

Gotchas

Although virtualization provides tremendous opportunities to improve your operations, there are some caveats of which you'll want to be aware. First, be sure to plan your virtualization strategy properly; gather metrics from the systems you plan to virtualize so that you can adequately provision the host servers.

Also be sure to contact your application vendors to be sure there won't be any support consequences when running applications in a VM. For many vendors, virtualization is a new experience, and they may not have the appropriate procedures in place to provide timely support.

Virtual Options

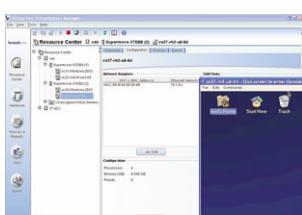
The increased adoption of virtualization is an ironic turn back toward computing's origins. With the ability to virtualize almost unlimited VMs on a single hardware platform, the future data center may resemble the mainframe centers that were recently viewed as dinosaurs. □

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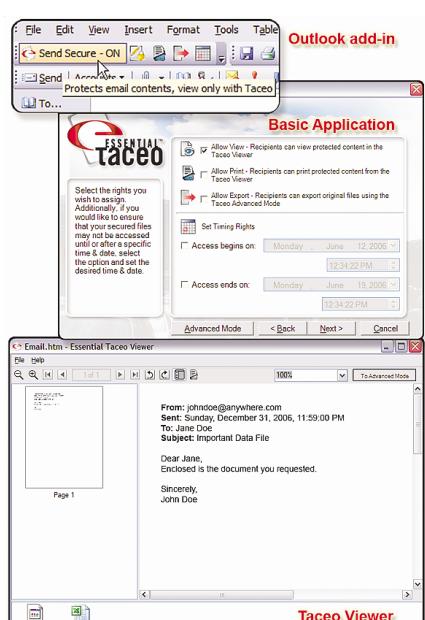
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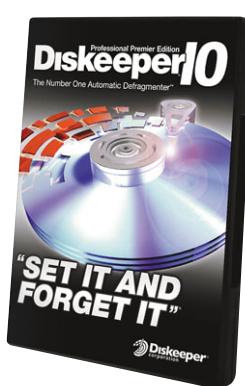
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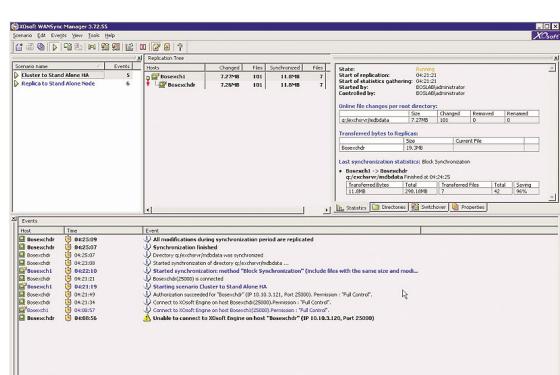
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Manufacturer Presentation

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Product Releases

PHYSICAL

Cabling

■ **APA Cables & Networks** has announced FDS (Fiber Distribution System), the company's integrated CO (central office) Fiber Frame System for FTTx (Fiber-to-the-x) deployments that use Homerun PON (Passive Optical Network). It's ideal for a situation in which all points can be reached from the CO over a 1 x 32, 1 x 16, or 1 x 8 signal strength, where placement of OSP cabinets isn't convenient and where OSP cabinets are cross-connects only. The FTTx FDS is built for 23-inch frame environments, but 7-, 8-, and 9-foot configurations are also available together with a group of compatible accessories.

■ TipTags are new nonadhesive cable markers from **HellermannTyton** suitable for wire bundles or large cables. They're made of thermally printable,

cross-laminated polyolefin that's halogen-free and RoHS-compliant. HellermannTyton says that TipTags are compatible with the company's T18 to T30 series ties and are ideal for applications where excellent print performance and long-term service life are important.

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■ Crush-resistant, yet flexible—that's **Panduit**'s new OPTI-Core Fiber Optic Indoor and Indoor/Outdoor Interlocking Armored Cable. The RoHS-compliant OPTI-Core doesn't need a conduit or inner duct because it has an interlocking, waterproof, aluminum armor shell. It's suitable for harsh environments as well as building interiors and is installable in a loose-tube fashion without splices at the vault. Check Panduit's site for a list of OPTI-Core's varieties. Panduit also released a NET-ACCESS Cabinet intended for switching and patching duty on your network. The NET-ACCESS grounds your equipment, cools it, and manages its cables. You can configure the

cabinet with open-rack accessibility or the security of a windowed box.

Power Management

■ **MGE UPS SYSTEMS** introduced new power meter options that provide access to information such as real-time trends, averages, and demand metering in addition to raw data. The optional power meters complement MGE's line of Power Management Modules. Meters come with RS-485, RS-232, or Ethernet interface options and use a variety of communications protocols such as MODBUS or JBUS.

Racks & Furniture

■ **GizMac** is accepting preorders of its upcoming 25U XRackPro2 noise reduction server rack cabinet. Other XRackPro cabinets include the 4U and 12U XRackPros. The noise reduction enclosures support many server types, including Apple, Linux, SGI, Sun, and Windows servers. They also support other rackmount systems, such as battery backup, storage, and networking equip-

ment. GizMac targets the enclosure at businesses that want to reduce noise from audio, video, medical, and computer equipment. The 25U XRackPro2 can be preordered for \$2,199.

.....

■ **Rittal** launched Rittal XPress, which gives customers the ability to match their specifications to various configurations of Rittal's TS8 enclosures and a variety of accessories. The Rittal XPress system comes in two programs: 1-Day for customer-configured cabinets and 3-Day for Rittal-installed and ready-to-use enclosures. Using the Rittal XPress 1-Day Program, customers choose the cabinet that fits their requirements and then select side-walls, shelves, fans, cable management, PDUs/power strips, single-phase UPS systems, and other accessories. Within 24 hours, enclosures with those specifications are shipped. The Rittal XPress 3-Day Program gives customers the ability to choose their cabinet size, door and roof

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Extending The Reach Of Group Policy

Inventory Snap-In From Special Operations Software Tackles Asset Management

by Joseph Pasquini

• • •

ONE OF THE less glamorous, but nonetheless fundamental, missions of IT administration is the gathering and maintenance of accurate asset management statistics. Software licensing and deployment standards, as well as asset inventory, can negatively impact a company's bottom line if not properly monitored. With the unveiling of Specops Inventory from Special Operations Software, the Stockholm-based management solutions vendor hopes to capitalize on the existing Active Directory infrastructure so commonly found in today's corporate arena.

Specops Inventory is designed to provide IT managers with the ability to collect and report from both the computer's and the logged-on user's perspective. Tied to the Group Policy features of Microsoft's Active Directory, Specops Inventory makes use of its IFP (Intelligent Feedback Protocol) technology to collect

inventory information. Six user categories and 13 desktop categories are available for reporting.

In conjunction with its Group Policy integration, Specops Inventory features a Web-based asset management capability that lets administrators gather information from and report on desktops and servers. Quantifiable

With its License Manager component, Specops Inventory lets organizations monitor and increase their overall licensing compliance.

information includes installed operating systems and drives, services, security information, and Registry data, as well as user profiles and settings. Specops Inventory's dynamic HTML-based reporting features drag-and-drop grouping, sorting, filtering, and graphing capabilities. Reports can be exported to HTML, PDF, CSV, XLS, and RTF formats.

With its License Manager component, Specops Inventory also lets organizations monitor and increase their overall licensing compliance. License Manager generates email notifications when an insufficient number of licenses are noted or when a maintenance contract is about to expire.

To get administrators up and running quickly, Specops Inventory features context-aware help and also leverages the GPMC (Group Policy Management Console) for administrative activities. GPEdit is also supported. According to the company, installation and setup requires 90 minutes or less. Additionally, Specops Inventory can function in combination with the Specops GPUUpdate, a free Special Operations Software utility offering Group Policy refresh, wake-on-LAN, and start/shutdown functionality.

There are obviously many competing products in the asset

management marketplace. Some of the more commonly known players in the arena include Microsoft's SMS (www.microsoft.com), Altiris Service & Asset Management Suite (www.altiris.com), and Numara's Track-It! (www.numarasoftware.com). Compared to these other solutions, however, the GPO-based Special Operations Software Specops Inventory differentiates itself from the pack thanks to its unique ability to perform inventory management functions using both computer and user credentials without the use of agents or services at the client level. "Since we do integrate closely with the Group Policy Object Editor, the learning period for a systems administrator is usually very short," says Johan Ogren, president of Special Operations Software. ■

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Product Releases

Continued from Page 16

options, and appropriate accessories. Rittal then installs the selected accessories in the customers' preferred locations and ships the ready-to-use units in three days.

COMMUNICATIONS

Router

■ SMEs, ISPs, and hospitals should take a look at SMC's new router. The EZ Connect Commercial Cable Modem Router SMC8004-BCM features DOCSIS 2.0 compatibility and 1.1 certification. It supports downloads up to 38Mbps and uploads up to 30Mbps thanks to features such as TurboDOX technology, 4MB Flash ROM, and 16MB SDRAM. RADIUS support, DES encryption, and CLI and GUI remote troubleshooting headline a list of advanced technical features.

Storage Networking

■ Network Appliance announced the availability of the 4Gbps Brocade SilkWorm 48000 Director. This new SAN scales from 32 to 256 concurrently active 4Gbps full-duplex ports in a single domain. The Brocade SilkWorm 48000 Director uses the same footprint as previous-generation Brocade directors. The SilkWorm 48000 is well-suited for data backup and consolidation projects.

Video

■ ATEN Technology has introduced four video appliances, the VS0202, VS0204, VS0404, and VS0116. The VS0202 is a two-port view matrix switch that can provide video output for two video sources from two computers. The VS0204 is a four-port product that provides output from two computers to four video sources. The VS0404 is the last of the matrix switches released at this time. It has four ports and provides video output from four computers to four video sources. All three of the new video matrix switches have resolutions of up to 1,920 x 1,440 pixels. The fourth introduction is the VS0116, a 16-port video splitter that supports audio and provides enhanced video and audio signals. The VS0116 transfers signals from a single source to up to 16 output devices. The VS0202 costs \$129.95, the VS0204 costs \$179.95, the VS0404 costs \$399.95, and the VS0116 costs \$395.95.

....

■ TRENDnet announced the TV-IP301 and TV-IP301W Advanced Day/Night Internet Camera Servers that provide remote security monitoring 24 hours a day over the Internet. TV-IP301 is a wired camera and TV-IP301W is a wireless camera. The cameras record and stream live video over the Internet, and each camera has its own IP address. Both cameras sup-

port UPnP and DDNS (Dynamic DNS) and have IR (infrared) lenses with 4X Digital Zoom, CCD image sensor, and DC-iris control. The TV-IP301 and TV-IP301W have a built-in microphone to monitor live audio. The accompanying IPViewPro software lets users monitor up to 16 cameras at the same time. Three adjustable motion detection windows can be set up to capture snapshot images, trigger an alarm, or send an email notification to users.

END NODES

Data Collection

■ National Instruments announced the NI PXIe-6259 and NI PXIe-6251 M Series DAQ (data acquisition) modules, designed for PXI Express-capable systems. The modules all feature National Instrument's system controllers, amplifiers, and calibration technology and are fully interoperable with existing PXI modules and software. National Instruments also announced four PXI Express controllers, the NI PXIe-PCIe8371, NI PXIe-PCIe8372, NI PXIe-8105, and NI PXIe-8351, all of which offer 1Gbps system bandwidth for demanding measurement and automation applications.

....

■ Psion Teklogix announced WORKABOUT PRO Speech, a RoHS-compliant mobile that transmits Vocollect Voice

recognition performance on a flexible data collection handheld computer. The WORKABOUT PRO Speech combines ISM (Integrated Speech Module) hardware with Vocollect's connector for its SR Series headset to provide high-quality voice recognition performance. The ISM audio circuit is optimized to run Vocollect Voice and has built-in connectors for Vocollect's SR Series headsets. WORKABOUT PRO Speech is compatible with the Psion Teklogix software suite and is designed for warehouses, distribution centers, and supply chain logistics environments.

Storage

■ Aberdeen has announced "Terazilla," also known as the 24 Terabyte Aberdeen Stirling X632 storage backup server. The company says one Terazilla can replace more than 12 servers while increasing transfer speeds and improving reliability. A completely configured Terazilla includes 32 hot swap/hot spare drive bays (up to 24TB of 3Gbps SATA II storage), two hot-swappable OS drive bays at the rear, dual GbE NICs, dual controllers (RAID 0, 1, 5, 6, 10 supported), and ABERAID remote RAID management software. The Terazilla works with multiple OSes and an included external SCSI connection allows for adding up to 60TB, including up to five 12TB XDAS-stored RAID boxes per SCSI or

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Simplify Storage & Sharing

LinkStation Pro Offers Fast Data Transfer Rates

by Joe Lazzaro

OPERATING A NETWORK or data center requires the supervision of large quantities of information, and organizations are turning to dedicated network-attached storage systems to contain and manage valuable files. While servers have a long and successful track record for file storage and retrieval, they are not the most affordable solution if storage is the end game in mind.

Enter network-attached storage, essentially a dedicated storage appliance that attaches to your existing

network. NAS is less expensive because it doesn't require a computer, keyboard, screen, and other peripherals. It's also cheaper than deploying an entire computer for storage because it provides just

what's needed for storing data, connects via standard interfaces such as Ethernet and Fibre Channel, and appears as another drive on the LAN as far as end users are concerned.

Buffalo Technology's new LinkStation Pro is a storage area network for small to medium-sized enterprises. The system supports both the Microsoft Windows

NAS is less expensive because it doesn't require a computer, keyboard, screen, and other peripherals.

and Apple Macintosh platforms. The SAN provides data transfer speeds of up to 35MBps, including a Gigabit Ethernet port and two USB 2.0 ports for connecting external storage drives. IT staff can perform regularly scheduled backups via USB 2.0 to external storage. The unit also supports SATA drives.

The LinkStation Pro supports Microsoft Active Directory, allowing the device to function as a client in an Active Directory domain, enabling it to utilize traditional domain users and groups. Companies can couple multiple LinkStation Pro units together for redundancy using the included Memeo AutoBackup software. Memeo runs under Windows, helping IT staff automate backup procedures, safeguarding valuable data. The device doesn't require additional drivers, making installation more streamlined.

The LinkStation Pro is available in 250, 300, 400, 500, and 750GB capacities. The device measures 2.4 x 6.3 x 8.5 inches (HxWxD)

and weighs 3.45 pounds, making it suitable for offices where space is at a premium.

According to the company, the Buffalo Technology LinkStation Pro represents next-generation NAS technology, and no products currently compete directly at the time of this writing. However, similar products come from Western Digital's Net Center (www.wdc.com), Maxtor's Shared Storage Plus (www.maxtor.com), and Seagate's Mirra Personal Server products (www.seagate.com). □

SNAPSHOT

Buffalo Technology LinkStation Pro

Ranges from \$279 for the 250GB model to \$899 for the 750GB model

Offers up to 35MBps transfer rates, up to 750GB disk capacities, and two USB 2.0 ports for expanded storage capability

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Software - Network & Systems Mgmt. Advertisement

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Product Releases

Continued from Page 17

Fibre channel. The Terazilla is now shipping with custom configuration options available at Aberdeen's Web site.

■ **Crossroads** released the NearEdge 924e and 924p storage controllers, designed for enterprise-class tape libraries and JBOD systems. Features of the NearEdge controllers include upgradeable library partitioning; the Crossroads Visual Manager, a graphical interface for adjusting management settings; and the ability to share tape libraries across multiple applications. The NearEdge 924e enables aggregation of up to five target devices per Fibre Channel switch port and the 924p lets users upgrade the controller to handle up to six partitions.

■ **Exabyte** released an LTO tape library for the entry-level market with native Fibre Channel support. Exabyte's new Magnum 224 LTO Tape Library (\$7,850) is a 2U unit with one LTO-3 tape drive and room for 12 tapes in its magazine. An additional 12-cartridge magazine costs \$350, which would bring total capacity to 19.2TB. Exabyte claims transfer speeds of 576GB per hour.

■ **IBM** has added the DS4200 Express to its family of System Storage DS400 Series products for small and medium-sized enterprises. Additionally, IBM has announced major enhancements for other models in the DS4000 line, including helping clients implement tiered data storage settings more easily. The DS4200 includes 4Gbps-capable Fibre Channel interface technology, up to 56TB of SATA storage, system- and data-management and data-protection tools, and more. The DS4200 Express will be available Aug. 25 with pricing starting at \$11,474. Upgrades for other products in the DS400 line are available now without any increase over current list prices.

■ **MicroNet Technology** announced the Platinum NAS 3.0 with up to 3TB of network storage capacity. The Platinum NAS 3.0 combines SATA drive technology with dual-channel gigabit Ethernet connectivity speeds. This new NAS drive claims to be smaller and lighter than competitive products and requires 35% less energy while offering 50% greater capacity. MicroNet's Platinum NAS 3.0 uses four 750Gb hot-swappable SATA drives. The RAID controller in the

Platinum NAS 3.0 supports four independent SATA drive channels with RAID 0, 1, and 5.

■ **SEPATON** and **NeoScale Systems** announced a secure VTL (virtual tape library) with FIPS (Federal Information Processing Standards) 140-2 Level 3 encryption and wire-speed performance. The high-performance VTL uses SEPATON's unique SRE architecture to reduce backup and restore windows quickly. Customers can expand the system from speeds of 150 to 2,400MBps and capacity from 4.8TB to 25PB while maintaining AES 256 data encryption. Behind this VTL is NeoScale's CryptoStor FC appliance and SEPATON's S2100-ES2 VTL.

Workstation

■ **Gateway** has released the new Gateway E-6610 in desktop and workstation configurations. Gateway says the E-6610 is its most powerful professional managed desktop yet and is ideally suited for organizations needing professional 3D applications, including MCAD, digital content creation, video-editing, and visualization applications. The E-6610 is based on the BTX form factor, is built on Intel's 975x chipset, and runs on Intel's Core 2 Duo CPU. Configuration options include SATA II and SCSI drives from 80 to 500GB and up to 4GB of DDR2 memory. The desktop version starts at \$1,199, while the workstation version starts at \$1,777.

Components

■ **Acrosser Technology** has introduced the AR-ES0831 series of embedded systems, which is designed to consume little space while remaining both reliable and rugged. This series of systems also has low power consumption combined with a fanless design. The systems feature either an Intel Celeron M or Intel Pentium M processor, two 10/100 LAN ports, two USB ports, four serial ports, and audio connectivity. A licensed copy of a Microsoft Windows XP Embedded OS image is optional.

■ **Advantech** has released the UNO-2668, a controller with a Celeron 400MHz processor and eight isolated serial ports. The UNO-2668 is fanless and features a 1U form factor for rack mounting. All ports and modes have status LEDs on the front panel for convenient system monitoring.

Lowest Cost Per Gigabyte Backup

Protect Data With Overland's ARCVault Series

by Julie Sartain

PROTECT YOUR BUSINESS DATA at a fraction of the cost, "the industry's lowest cost per gigabyte," says Overland Storage about its new tape backup devices called the ARCVault series. Designed for businesses that need cost-effective backup and archive solutions for large amounts of data, Overland's ARCVault 12 autoloader provides 9.6TB of backup storage space and, for larger companies or small companies

with massive data storage needs, the ARCVault 24 library offers 19.2TB of storage space.

Both ARCVault 12 and ARCVault 24 support industry leading LTO-2 and LTO-3 tape drive technologies in a space-saving 2U form factor to provide the highest capacity in the smallest form factor at the lowest price per gigabyte on the market. In addition to maximizing the use of valuable rack space, Overland designed the family to expand as requirements dictate. To that

Product Releases

The product also supports 256 or 512MB of memory and comes with an Lm sensor for tracking CPU and motherboard temperature. The controller has EWF and is equipped for Windows CE .NET and Windows XP Embedded SP2. It also has Windows 2000/XP and Linux driver support. The UNO-2668 starts at \$1,325.

■ **Fujitsu's** Microelectronics and Laboratories of America divisions jointly introduced the MB8AA3020, which is the industry's most powerful 20-port, 10Gbps Ethernet switch IC. The new switch chip offers more than 400Gbps, nonblocking, aggregate switching bandwidth via 3MB of shared buffer memory, including on-chip 10Gbps serial SerDes (serializer/deserializer). The chip includes 20 high-bandwidth, full-duplex 10Gbps ports embedded in one integrated 1,156-pin FCBGA (flip chip ball grid array) package. Pricing for the chip is available from Fujitsu upon request, and samples and evaluation boards are also available.

■ **GE Fanuc Embedded Systems** launched its 6U rack-mountable CompactPCI C2K single-board computer, based on the PowerPC processor. Customers can configure the new single-board computer with either the 1GHz MPC7447A or the 1.4GHz MPC7448 Freescale processor. Other features include a DDR333 SDRAM controller for up to 1GB of system memory, two 64-bit IEEE1386.1 PMC sites, three Gigabit Ethernet ports, four RS-232/422 ports, four RS-422/485 ports, two 1.5Gbps SATA ports, and three USB 2.0 ports. The C2K supports VxWorks, Linux, and WinXP.

■ **National Instruments** unveiled its new PXI-1033 chassis and integrated MXI-Express remote controller, which lets customers assemble a custom PXI system. The PXI-1033 includes five peripheral slots and a host card for controlling the system from a host PC or notebook. The PXI-1033 supports the NI LabVIEW graphical development environment, LabWindows/CVI, SignalExpress, and NI TestStand and provides throughput speeds of up to 110MBps with the integrated MXI-Express controller. The chassis is available for \$999.

end, ARCVault 12 can be easily upgraded to ARCVault 24, simply by inserting an additional magazine.

Christie Huff, vice president of worldwide marketing at Overland, says the family was designed to provide unsurpassed operational simplicity yet includes features typically found in more expensive tape libraries. The family includes a touchscreen front panel and Web-based remote management for streamlining installation and ongoing management and a barcode reader



SNAPSHOT

Overland Storage ARCVault 12 & 24

ARCVault 12 starts at \$4,995; ARCVault 24 starts at \$5,994

Offers 50 to 70% more capacity and costs 45% less per gigabyte than its competition

www.Processor.com/Overland

SOFTWARE

Application & Web Development

■ **SWsoft** released an enhanced version of its Web site authoring software, SiteBuilder 3.2. Administrators now can publish files to any HTTP server. The software has a new Web interface and includes Virtuozzo and Plesk 7.6.1. The software offers better scalability and a target location search, as well as a Web page that displays both installed and available components. SiteBuilder also offers VZ Templates for hosting service providers.

Business Productivity

■ **Datacap** announced a partnership with **Content Analyst** to offer improved document classification and search software. Datacap will combine its document capture knowledge and SOA with Content Analyst's search and classification software. The combined services will allow organizations to turn unstructured content into organized and searchable content and improve their Enterprise Content Management. Content Analyst software can match specific document types and build a user's search database for context sensitive searches.

Database & Data Mining

■ **Sybase iAnywhere** unveiled SQL Anywhere 10, the latest version of its database and data exchange software. SQL Anywhere 10 includes more than 200 new features and enhancements to database server performance, data protection, and developer productivity. New database server performance features include materialized views, intra-query parallelism, snapshot isolation, and parallel backups. New methods of data protection include high-availability data mirroring and Veritas cluster agent options. SQL Anywhere 10 helps increase developer productivity with .NET 2.0 and Symbian devices support and Microsoft Visual Studio 2005 integration. SQL Anywhere 10 has a base package price of \$599 for five users or \$1,099 for 10 users.

■ **Teradata** announced Teradata MDM (Master Data Management), which defines and classifies key product, supplier, and customer data shared across a business in a

Go to Page 20

for fast and efficient media management. Removable magazines eliminate the need to manually swap tapes while easing offline storage, and the ARCVault 24 tape library includes Overland's patented mailslot feature, which enables authorized users to add and remove cartridges without disrupting the system.

ARCVault competes very favorably with such comparable offerings as ADIC's FastStor 1 and FastStor 2 (www.adic.com), Quantum's SuperLoader 3 (www.quantum.com), Exabyte's Magnum 1x7 and Magnum 224 (www.exabyte.com), HP's StorageWorks 1/8 (www.hp.com), Dell's PowerVault 124T and PowerVault 132T (www.dell.com), and IBM's TS3100 (www.ibm.com). However, the ARCVault family offers 50% more capacity at up to 45% lower cost per gigabyte than competing tape automation products, the company says.

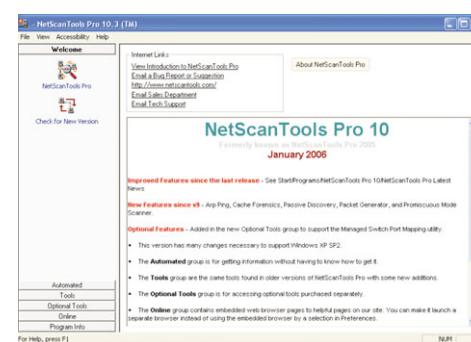
Compatible with the popular backup software on the market today, ARCVault is also compatible with the top operating systems, including HP-UX, IBM AIX, Linux Mac OS, Novell NetWare, SCO Unix, Sun Solaris, Tru64 Unix, and WinNT/2000.

Manufacturer Presentation

Software - Network & Systems Mgmt. Advertisement

NetScanTools Pro is an ideal tool for the network security, administration, training, Internet forensics, and law enforcement fields.

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Product Releases

Continued from Page 19

single view through an EDW (Enterprise Data Warehouse). It synchronizes master data across multiple occurrences of an enterprise application, coordinates master data during application migration, and supports compliance and performance management reporting across analytic systems.

Messaging & Groupware

■ **CEZEO** launched LanTalk NET 3.1, an application that provides instant messaging without requiring any setup or administration. The application can run without a server and works over LAN, WAN, intranet, or Internet using static IP addresses to connect with other systems. LanTalk NET can automatically detect which users are available; make them available to each other instantly; and enable them to send attachments with messages, print messages, and set message priorities. The software also can provide a secure connection by closing ports at the network firewall. LanTalk NET 3.1 is compatible with Windows 9x/Me/NT/2000/XP and costs \$17.95 per user for up to nine users. Special multi-user discounts and site licenses are offered for enterprises with more than nine users.

Network & Systems Management

■ **Dorado Software** released Redcell Management Essentials, a Juniper Networks Enterprise Edition product package targeted at SMEs. The initial release supports the SSG (Secure Services Gateway) family and J- and M-series routers, as well as Firewall/IPSec platforms, with options available to manage E-, M-, and T-series platforms. It offers management, automation, and CMDB (configuration management database) functions; additionally, config file

backup, auditing, and network/topology views are offered, among other features. RME-JE provides real-time device configuration and health monitoring. Administrators can make script-based configuration changes via the program's GUI. Customers also can add other Dorado products, such as Redcell Change Manager, Inventory Manager, Policy Manager, and VPN Service Center. RME-JE is available with a single vendor license for \$8,995. The license supports up to 50 Juniper Network devices; customers also have the option to upgrade to a multivendor edition.

■ **National Instruments** introduced the latest version of its LabVIEW graphical system design platform, which lets engineers test, control, and develop custom embedded systems. LabVIEW 8.20 now works with MATLAB software, includes new FPGA-based custom hardware design wizards, and offers updates to the NI Modulation Toolkit for LabVIEW. The software also lets users design and maintain large test systems, author advanced user interfaces, and utilize wizards to automatically generate interfaces for .NET Web services and DLLs. LabVIEW is compatible with Windows, Macintosh OS X, and Linux operating systems.

■ **RadiSys and GoAhead Software** announced a standards-based, preintegrated, high-availability ATCA (Advanced Telecom Computing Architecture) solution. This new solution integrates RadiSys Promentum, a managed platform for network element and dataplane applications, with GoAhead SelfReliant, a standards-based high-availability middleware. The integrated solution includes platform and system management functions designed to help equipment manufacturers accelerate

time to market and reduce project costs. The newly integrated solution will be available in the fourth quarter.

■ **SCO** is targeting its new HipCheck mobile service at system administrators who need to remotely control Unix and Windows servers. The HipCheck mobile service enlists the help of EdgeClick Mobility Server technology, runs on Windows PCs or smartphones that use Windows Mobile, and offers support for Windows Vista. It can alert an administrator when a parameter or threshold is reached via email or through the administrator's phone via SMS messages.

Security

■ **AirDefense** has released Mobile 4.0, the latest version of its security and wireless network assessment application. Among the version's new features are alarm notifications through email, Syslog messaging, and a new analysis engine that's built on the company's AirDefense Enterprise software. The analysis engine gives network administrators more than 100 alarms based on security and performance. Additionally, this version has a new GUI, including WLAN security views and separate wireless functions. AirDefense is also launching a hardware kit for use with Mobile 4.0 that includes an 802.11a/b/g wireless card with one omnidirectional antenna and two directional patch antennas. The kit bundles with Mobile 4.0 for \$1,695.

■ **AirMagnet** has released AirMagnet Enterprise 7.5, which adds better wireless security features and improves the wireless performance of pre-802.11n systems as well as their compatibility with the upcoming standard. It also includes spectrum trou-

bleshooting, tools for diagnosing wireless intrusions, and security and interoperability alarms. It's designed to meet the most current drafts for 802.11n technology to ensure the smoothest crossover when the new technology is ratified by the IEEE. AirMagnet 7.5 can scan more than 200 channels in the 802.11a band and includes RADIUS support. The software starts at \$8,995 for new customers but is a free upgrade for existing AirMagnet Enterprise customers.

■ **CRYPTOCARD** introduced a universal version of its CRYPTO-Server 6.4, a software token designed to allow remote corporate employees to use a BlackBerry handheld to access the corporate network. The token allows the BlackBerry to generate a random one-time VPN password in order to create the two-factor authentication code necessary for network access. CRYPTO-Card's offering negates the need for hardware tokens that generate VPN passwords and eliminates the security risks associated with static single-factor passwords.

■ **McAfee** unveiled two new security risk management solutions: McAfee Foundstone Enterprise 5.0 and McAfee Preventsys Compliance Auditor and Risk Analyzer. Foundstone Enterprise 5.0 gives companies the ability to prioritize and rank their highest-value business assets and identify their most critical security vulnerabilities and threats. Foundstone works in combination with Preventsys Compliance Auditor to provide advanced policy compliance reporting. Preventsys Risk Analyzer consolidates and analyzes security data from multiple vendor sources to assist in the evaluation of security risks and compliance issues.

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Product Releases

■ **Nuance Communications** released Nuance Speaker Verification, a voice biometric application that confirms the identity of callers over the phone. It's targeted toward call centers for banking, brokers, and telecommunication services as a tool in the fight against fraud and identity theft. Nuance claims that the product works over VoIP and wireless phones as well as landlines and that it isn't misled by colds, emotional speech, background noise, recordings, or impersonations.

■ **Process Software's** VMS Authentication Module has been certified for technical interoperability with RSA's SecurID two-factor authentication. The module can be integrated with the login procedure on an OpenVMS system, or it can be used to protect particular applications, requiring an RSA SecurID card for user access.

■ **Sybase** released the latest version of its analytics server Sybase IQ 12.7, said to offer better privacy and compliance features, as well as provide enhanced data migration. The package can include the Encrypted Column Option, which prevents unwanted viewers from being able to read disk data by making the data unintelligible, meaning compromised media can still protect data. Pricing for Sybase IQ 12.7 is available at the company's Web site.

■ **Viking InterWorks** introduced Viego, a security and mobile software suite to complement its flash-based USB product line. Viego helps prevent unauthorized users from accessing files via a suite of applications that support data protection, password management, and workstation security. ViegoPad is a secure portable working space for USB

flash drive customers to transfer their applications, files, passwords, and settings. ViegoVault lets users store confidential and valuable data in a virtual and concealed local drive that encrypts files with a 256-bit AES cipher. ViegoPasswordVault stores, manages, and accesses account names and passwords for Web sites and secure applications. ViegoShades provides privacy in public places by altering the contrast ratio on the screen so only the user can see it. ViegoTime also ensures that users have the most accurate time for the set time zones.

Storage

■ **EMC** introduced EMC Documentum IRM (Information Rights Management) and Documentum Records Manager 5.3, two content-management applications designed to assist companies in responding more quickly to regulatory requirements while providing a more secure method of sharing and disposing of information. The programs are complementary and are now part of EMC's enterprise content-management platform. Both programs are now available, with pricing varying according to configurations.

■ **TeraCloud** released TeraCloud Integrated Storage Analytics, a software program that identifies conditions and predictive events in which storage utilization is sub-optimized. TeraCloud Integrated Storage Analytics can help identify, align, and map existing storage assets to individual business schemes. It reports the storage infrastructure and outlines measurable metrics of the storage environment. The software also provides high-level enterprise views and detailed file-level information to help customers understand how storage dollars are spent and allocated.

Manufacturer Presentation

Services - Network & Systems Management Advertisement

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Switch and Router Design and Implementation: Our Cisco Switch Design & Implementation Services include Install & Configure; Security Audits; Spanning Tree Configuration; VLAN Design & Implementation; Code Upgrades; Password Recovery; HSRP Configuration; WAN Design & Implementation.



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Manufacturer Presentation

Services - Storage Advertisement

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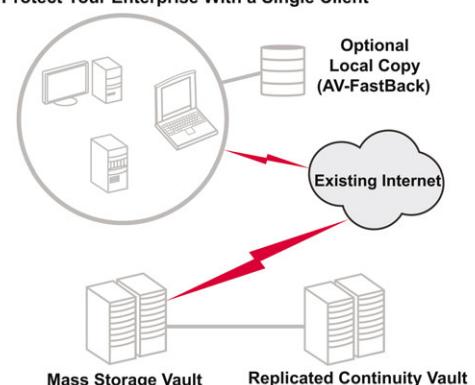
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Locate Wi-Fi Black Holes In Your Network

BVS Honeycomb Pinpoints Interference Sources

by Cynthia Lazzaro

• • •

WITH THE INCREASE of wireless devices and limitations on available ranges as well as standards that are, in some respects, still under construction, setting up a reliable wireless environment with minimal or no dead spots can be a chore.

However, a new software product called Honeycomb, recently released by Berkeley Varitronics Systems, will make things a lot easier for network engineers. Honeycomb is designed as an

add-on product for the company's BVS BumbleBee spectrum analyzer. With the combination of Honeycomb and BVS' Bumble-

Bee product, the two make a powerful tool in terms of not only capturing and measuring wireless band ranges but also now mapping those bands and overlaying the information onto floor plans to identify dead spaces and causes of interference.

Honeycomb locates intentional and unintentional interference, provides channel verification, and even assists in tracking network intrusion attempts.

The BumbleBee product runs on an iPAQ Pocket PC device and is designed as a receiver to measure, capture, display, and record individual wireless bands in the ranges of 900MHz, 2.4GHz, 4.9GHz, 5GHz, and even WiMAX. With BumbleBee, engineers can tap on points of interest in the waveform on the iPAQ screen and isolate them for further analysis.

Honeycomb is interference-mapping software that supports the BVS BumbleBee spectrum analyzer. When installed, the Honeycomb software can separate one wireless signal from another, separating 802.11 Wi-Fi signals from those frequencies causing the interference. Honeycomb achieves this by overlaying RF information onto maps or floor plans.

Honeycomb helps administrators locate intentional interference by malicious individuals or groups jamming a signal, and it can also locate unintentional interference, provide channel verification, and even assist in tracking network intrusion attempts. Using Honeycomb with BumbleBee, network engineers can locate and fix areas where signal strength is under par or can assure themselves that a signal-free zone is truly signal free.

SNAPSHOT

Berkeley Varitronics Systems Honeycomb

\$250 discount to current BumbleBee users

When combined with BVS' BumbleBee component, it lets network engineers identify and enhance locations where Wi-Fi signals are low and can help assure an RF-free secure zone is really RF free

www.Processor.com/Berkeley

Tandberg Meets Increasing Capacity Demands

Scalable Storage With Modular Design

by John Brandon

• • •

ASK ANY DATA CENTER manager about the No. 1 problem in storage, and the answer might surprise you: It's not speed, reliability, or even changing technology. At many companies, the real choke point is an ever-increasing demand for capacity. Like the 120GB hard drive that seemed so spacious on your notebook and then fills in three months, data centers fight the same battle on a much grander scale. Videoconferencing streams, VoIP data, high-resolution photos for business imaging, and bloated Office documents all consume gigabytes.

The second most frustrating issue is that, even if you do purchase wisely with an eye

for future expansion, there are still scalability problems with some products. Governance issues create new problems when your company is required to plan for future growth. The Tandberg StorageLibrary T128 is one of the most high-capacity yet scalable products available for meeting these new requirements. The system houses 128 slots for tapes and also lets you install up to six additional SCSI or Fibre Channel LTO drives. LTO technology has become a new standard for small and mid-sized enterprises in the same way that SAN technology has revolutionized network performance.

With the T128, companies can scale from 28TB to a jaw-dropping 102.4TB. Yet it's the I/E Mail slots that administrators can configure for six, 12, or 18 tapes for either single or bulk loads, along with the drive expansion and modular design, that make the system worth considering.

The system also uses an RAS (Reliability-Availability-Serviceability) ticketing process that self-tests and alerts admins about any heat, power consumption, or operational errors. Tandberg provides methods of notification through alerts on the T128 itself, email, a Web client, or a screensaver that lists any known defects. With email, you can configure the system to notify up to 10 individuals about potential archiving errors. Tandberg provides all monitoring, installation, management, and administration guidance, and the mean-time-to-repair rating is 30 minutes. Tape system upgrades can take only 30 minutes or less.

Other LTO products, such as the IBM 3583 Tape Library (www.ibm.com), are also scalable but typically with fewer slots available (such as 12) and lower total capacity (such as 57TB). Enterprise solutions, such as the Quantum PX720 with a 290TB capacity and room for 20 drives (www.quantum.com), are too cost-prohibitive for smaller companies. The Tandberg T128 has excellent scalability while being more affordable to nonenterprise companies. General availability in the United States is scheduled for sometime in the next month. □



SNAPSHOT

Tandberg Data StorageLibrary T128

Features high scalability and proven LTO technology

www.Processor.com/T128

.quantum.com), are too cost-prohibitive for smaller companies. The Tandberg T128 has excellent scalability while being more affordable to nonenterprise companies. General availability in the United States is scheduled for sometime in the next month. □

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OPINIONS

BENT • ON • STORAGE

The E's Have It

Summer is usually a dull time for product announcements, but this summer there were a couple things in storage that I thought were significant. A couple weeks ago one of my favorite storage companies, EqualLogic, announced Version 3.0 of its PS Series storage subsystem firmware. While discussions about firmware usually draw yawns from most of us, I sincerely believe EqualLogic's announcement is one of the most important storage developments of the year. To make a long story short, the company has written a whole new chapter in storage virtualization that makes it much easier to control storage operations and costs.

Most of EqualLogic's customers would tell you that the biggest benefit of owning its products is the ease of management compared to other storage products and the value of the integrated software that comes with the system. However, as a storage technology aficionado, the thing that I like the most is its overall architecture, particularly its approach to virtualization. I expect that EqualLogic customers today will be very happy tomorrow when they discover certain benefits from their PS Series products that they aren't even aware of yet.

Virtualization's Role

Virtualization is one of the most important technologies for managing storage in a SAN. As the amount of stored data continues to compound at ridiculous rates, it is essential to implement storage infrastructure technology that helps deal with scalability problems. Virtualization is simply the best technology available to manage storage scaling today.

EqualLogic has developed a distributed virtualization system that manages storage resources across multiple storage systems and presents them as pools, or logical chunks of storage that are made available to servers in the SAN. Each PS Series subsystem has an underlying RAID manager that intelligently and automatically performs the mundane and time-consuming tasks of array striping.

An EqualLogic storage administrator starts with its first system and allocates the storage into one or more pools, depending on the server and application requirements. You can have a storage subsystem with one pool, multiple pools, or multiple subsystems with one or more pools. When managing a single subsystem, this is not exactly a grand slam, but

things really start to get interesting when multiple PS Series subsystems are combined in a SAN.

With the new firmware version, EqualLogic storage subsystems automatically scan the network to discover other EqualLogic systems. If they find them, they invoke an installation wizard that shows administrators the

MARC FARLEY

AUTHOR Marc Farley is the author of "Building Storage Networks," the leading technology book in the field of storage networking. He is also the president of Building Storage, Inc., a company that provides consulting and educational services to the network storage and financial services industries. Farley regularly writes and speaks about storage networking technology and is an online expert for the SearchStorage Web site.



storage pools they have already defined on other systems and lets them easily add new storage resources to those that already exist. In a matter of a few mouse clicks, a storage volume that previously may have been filled to capacity can suddenly have all the additional storage capacity needed. This is accomplished without moving any existing storage or servers and without changing the configuration of the existing storage or servers. In other words, it is a completely nondisruptive way of expanding storage capacity.

Meeting Specific Storage Needs

Imagine having a SAN where storage resources can be allocated by application on demand simply by adding another storage subsystem to the network. Not only that, imagine a SAN where multiple pools can be established for different applications and storage

can be added specifically for one or more of these application pools. It is fairly easy to see how the automated expansion of storage on an application-by-application basis would save administrators a great deal of time while simultaneously making them more responsive to different business units within the company. If you are thinking about tiered storage for your SAN, you might be able to see how different classes of storage could be placed in the appropriate pools and managed separately within an EqualLogic SAN.

The pools of storage in Version 3.0 provide the same type of load balancing that PS Series storage subsystems always have. This is a result of the storage paging architecture that has been part of EqualLogic products since their inception. That means when new storage resources are added to an existing pool, the EqualLogic systems automatically start moving storage pages between subsystems in order to balance the I/O traffic. This means the addition of new storage to an existing pool also provides an automatic performance boost.

Another interesting development in the industry occurred around the Fourth of July when EMC purchased RSA Security, one of the leading companies in network and Internet security. While some think this means EMC will integrate RSA Security technology with its storage products, I don't think EMC needs to do this to be successful. Instead, it can leverage both its storage and its newly purchased security businesses to solve the most pressing needs of enterprise data center customers. This was a very astute business move by EMC, a move that positions it as a premier supplier of data center technologies—not just storage.

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The VPC3106 series is made with rugged steel and has a black finish. The unit is 68 inches tall without the mounting brackets and 70 inches with the standard brackets installed. (Optional brackets allow mounting to virtually any rack or any location.) The input power connector is a three-phase 120/208 volt 30 amp, NEMA L21-30P, connector. The VPC3106 series comes standard with a 15-foot power cable. There are three circuit breakers, each protecting a section of eight outlets. The circuit breakers meet UL and NEC requirements for branch circuit protection, ensuring safe and code-friendly installations. Each circuit breaker has an indicator light. To ensure secure connections, the VPC3106 is compatible with the cable restraint and management system KIT-CABLRES-23 (ordered separately).



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OPINIONS

DATA • DEVELOPMENTS

Making The Best Use Of Your Vendor Resources

For the past two weeks I've been kinda distracted. I got called up for jury duty and (of course) got picked to sit in judgment on a petty "driving a stolen car" case. What a total waste of time. Sure, they need to adjudicate these petty cases, but this is the second time this evildoer had gone to trial for the same crime; the previous trial resulted in a hung jury. Unfortunately (for the state), so did this case. This must have cost the state a small fortune.

As a kinda technical guy, it was interesting to see how the use of

technology affected the investigation and trial. I'm a fan of the "CSI: Miami" and "Crossing Jordan" TV shows where the crime scene investigators comb through the detritus for tiny clues. Sure, the new King County (Washington) Regional Justice Center (in Kent) was wired for open-access wireless access, which is cool, but they had some problems keeping it up.

We also were told that the lead detective in the case had recorded an interview with the defendant on his digital recorder and copied it to a USB key to pass to the

prosecutor. The defense attorneys had a field day trying to discredit the process of moving these bits from one location to another.

These same attorneys could have used a lesson or two on PowerPoint, as well. The jury had a dickens of a time trying not to laugh out loud at their fumbling and crude slideshow. This should remind us technogeeks that not everyone knows how to use the tools and applications we take for granted. For example, the pictures used as evidence were pitiful. The Kent policemen who made the initial arrest did not take a single picture at the scene. The only pictures we saw were taken by the victim's daughter, who did not know how to set the date stamp on her camera, and these were terribly blurry. I guess Kent does not have the funding of the "CSI" shows on TV.

Wasting Resources On A National Scale

When I got back to work, I was informed that I had promised to spend the next four days helping my daughter move—again. Her husband is in the Air Force, and they (like all military families) are forced to relocate every three

years or so, some far more often. Again, what a phenomenal waste of everyone's time, talent, and resources.

My daughter's family has had to spend countless hours preparing for this move, including trying to sell their house in a declining market, finding and buying another home near the new duty station, and dealing with a dozen utility issues, real estate agents, bankers, lawyers, movers, and military bureaucracy. 99% of this was done while my son-in-law was still in Afghanistan. I really worry about the families new to the military who don't have parents in the local area to help out with these endless relocations. It's no wonder that so many men and women leave the military to find work elsewhere (if they can) after having been uprooted and shuffled around the world every three years or so at the whim of some office in the Pentagon.

Treating Vendors Like A Consumable

Why does this matter to you as an IT manager or developer? Well, it might not, but it brings home a point about how employees, vendors, consultants, and suppliers are treated. In the case of the jury (who "donate" their time to the courts), the system wasted hour upon hour of our time because the attorneys, defendants,

or witnesses were late, not ready to proceed, or the Regional Justice Center was "centrally" located 28 miles away.

The other question remaining is why wasn't this case dropped the first time the jury was hung? Clearly the state did not have an adequate case to convict, even with bumbling techno-illiterate defense attorneys. Again, it was a waste of everyone's time and money—yours and mine. In the case of the military move, this constant relocation is terribly expensive for every one of us—them, their parents, their employers, and the communities they support. These people reflect millions of dollars of training and experience accumulated over their years of service. I think it's a crime to squander it.

Do you treat your consultants, employees, and suppliers like they don't have families, other jobs, or lives? I hope not. As a trainer, mentor, and consultant, I too am subject to abuse by a small minority of the firms I work with. One company in particular has not paid me for my latest conference, and frankly, I understand why—they have run out of money. Perhaps they too have squandered the goodwill of their own suppliers, vendors, and employees. □

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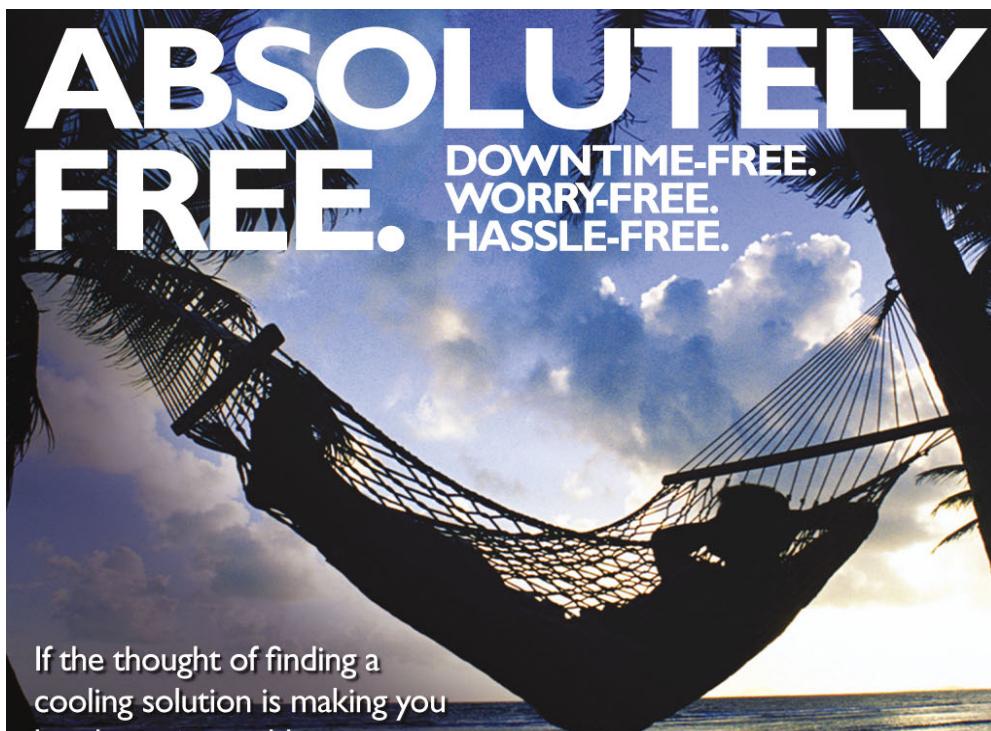


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Refine Your Candidate Interview Process

The SME's Approach To Landing The Right Hires

by Will Kelly

• • •

As the IT job market begins to heat up again, it's a perfect time to tune up your small to medium-sized enterprise interviewing process so you can land the needed full-time employees and contractors to staff your critical projects.

The way you interview a candidate reflects directly on your organization, and we've gathered some tips from experienced IT recruiters to help you refine your SME's interview process.

General Interviewing Tips

"Time. Just like the adage says, time kills all deals," says Sheelah Malicse, technical recruiter for McLean, Va.-based CelerityIT, a technology and business integration and consulting firm. "Each organization has the goal of hiring the best. Each organization usually has a process in attaining that goal. Sometimes you hire the best available candidate, and it can be a dance—some days it's a waltz, other days it's not. This is a hot market, and we need to remember to watch out for the tipping point of when that excitement of the new opportunity loses its luster and the candidate decides to go elsewhere," Malicse says.

Walt Strausbaugh, senior vice president of national recruiting for Ajilon Consulting, based in Towson, Md., views honesty and directness as an issue with interviewers. He says, "As a hiring manager, always be honest and direct with the candidate about the company, corporate culture, job responsibilities, and your management style. In the interview process, an intuitive job seeker is always going to speak with other employees about you and the organization. Any inconsistencies that they uncover about what you've sold them on is a surefire way to lose them early on in the process."

Strausbaugh advises the following to improve your interviewing process: "As an interviewer, dig beneath the surface! Remember, job seekers only display on their resume what they want you to see. Your ability to uncover any red flags [gaps in employment, reasons for leaving, conflicts with superiors, etc.] is critical in weeding out candidates."

He further advises, "Also, make sure to do a deep dive into specific areas you want to address with the candidate. Instead of just having him/her discuss career highlights and accomplishments, pick one or two areas to focus on in-depth and ask detailed questions on their methodology and tactics. This will give you a much better perspective on how they achieved their goals and how their work style might match with yours. This key insight will help you

better identify candidates that are the right fit to your culture."

Senior Staff Interviewing Tips

When interviewing for senior staff, many of the same tips apply, but there are some notable process differences. Laura A. McCarthy, executive search director of Qualified Search, an IT management and executive recruiting firm based in Herndon, Va., sees disorganization as one of the biggest mistakes that companies make when interviewing candidates.

McCarthy says, "Hiring managers should have their business objectives for the position determined before the interview and should be able to share this information in an organized fashion with the candidate. Also, follow-up with the candidate is key, especially if the interview process is lengthy with long gaps in between interviews so that the candidate does not lose interest."

She also offers the following tips to fine-tune your interviewing process for senior-level candidates: "Make sure you have the candidates meet with the appropriate level interviewers. Senior-level candidates can easily be turned off if they meet with people at too low of a level as the initial part of the process."

Her next bit of advice applies to even junior and midlevel candidates: "The interview should be a 50/50 discussion with both parties talking about the same amount

of time. Many interviewers will take up the entire interview describing the company and position. Half the discussion should involve insightful questions that will determine if the candidate can meet the business objectives. Those questions should be open-ended so that the candidate can describe their experiences in meeting similar objectives."

Better Interviewing

Even if your SME doesn't have an HR department, you can still have a well-honed interview process to interview and hire candidates to fill your open positions. Timing, preparation, honesty, and following up with the candidate can help your SME compete effectively in the current employment climate. □

Improve Your Interview Process

Here are some tips to improve your candidate interviewing process.

- Define the business objectives for the position you are hiring.
- Consider whether you have resources to interview the candidate. Can you set aside time to interview?
- Make sure budgets are in place before taking the steps to hire.
- Coach your interviewers to have a 50/50 discussion with candidates during the interview.
- Know your realistic timeline for hiring, including how long you will wait for that perfect candidate. How will waiting affect your team? Will you be ready to get the candidate started once you make the offer?

Manufacturer Presentation

Communications - Telephony Advertisement

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The IntraCore 38480 supports jumbo frames up to 9k per frame, best for use with multimedia applications and network storage. With additional features such as CoS and IEEE 802.1p traffic prioritization, applications such as VoIP can pass traffic with minimal latency.



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Open Source Gaining Corporate Acceptance

As Products Mature, Companies Are Taking Them Seriously

by Tony Bradley

THERE ARE A LOT OF clichés about free stuff. Most of them are not great. Things like “you get what you pay for” or “nothing good comes for free” would lead you to believe that free products, by definition, are inferior to more expensive products and should be avoided.

When it comes to software applications, this outlook does not necessarily hold true. Open-source software provides a number of options that are often as good, or better, than their commercial or retail competition. Traditionally, executives and network administrators have frowned upon most open-source software for one reason or another. The reality is that budgets

are tight and open-source products have matured, and companies should start to consider open-source products for their networks.

The Changing Corporate Culture

Corporations in general are starting to be more accepting of open-source solutions as a viable alternative. According to Sonny Discini, senior network security engineer for the Montgomery County Government in Maryland, “Open-source tools are being given stage time in popular data center publications and are no longer considered the work of amateur coders. In addition, budgets are tight so businesses are integrating in free solutions that perform the required tasks.”

Bernard Golden, author of “Succeeding With Open Source” and CEO of Navica, a provider of consulting services to help companies implement open-source solutions, says, “Hardware costs are plunging, which means more individuals have the means to write software; the spread of broadband means more people can easily communicate and share software; and, of course, both of these mean that people all over the world can collaborate on software to mutually create high-quality products. Beyond the infrastructure developments, the enterprise software model is being challenged by high vendor operational costs, customer antagonism to what seem like arbitrary vendor decisions (end-of-life decisions on products, mandatory upgrades, etc.), and market saturation, so venture capital is flowing to

lower-cost models like open source.”

The result of this collaboration and growth in the open-source industry has been an influx of

programs that are capable of enterprise-class operation and can be considered alongside established commercial products when exploring new software options.

Open-Source Options

Across the spectrum of applications used in a typical corporate network or data center, many viable open-source tools can be used. Aside from established open-source tools such as Apache (Web server), Snort (IDS), NMap (port scanner), MySQL (database), or

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Open Source Maturity Model

It doesn't really matter if you are evaluating a commercial software product or an open-source offering; you want to make sure it can handle your needs. Not only is it important for the software to have the features and functions you are looking for, but it needs to be robust enough to handle your enterprise and provide adequate training and support opportunities in order for it to be a viable option.

Navica, a company dedicated to helping other companies evaluate, select, and implement open-source software, has developed the OSMM (Open Source Maturity Model). The OSMM is a collection of templates designed to assess and quantify the software, training, technical support, documentation, and other facets so that you can conduct a systematic evaluation.

To learn more about the OSMM templates and how to use them, you can download the OSMM white paper at www.navicasoft.com/pages/OSMMwhitepaper.html. The OSMM templates are available for free from the Navica Web site. You can find them at www.navicasoft.com/pages/osmm.htm.

Enterprise Digital Rights Management

Gaining Remote Control Of Confidential Data

by Robyn Weisman

CONTENT IS EVERYWHERE. Microsoft Exchange files on the server. Word files on the desktop. HTML archives on the laptop. MPEG video on the smartphone. PDFs on USB sticks. The types and containers of content multiply at lightning speed.

And as these documents proliferate, an organization falls under increasing risk of compromising the confidentiality of its clients, violating all sorts of compliance

mandates, and having its intellectual property co-opted. Many organizations already have NAC (network access control) systems in place to prevent intruders from accessing their documents, but NAC solutions cannot prevent an authorized user from accidentally emailing the executive committee notes to the wrong recipient, let alone doing something with malicious intent.

Enterprise Digital Rights Management, or E-DRM for short, addresses such concerns. In a nutshell, E-DRM solutions manage content from inception to demise and controls the type of access users may have.

Degrees Of Access

Keith Banda, director of sales engineering at E-DRM provider SealedMedia (recently acquired by Stellent), says that its solution, as an example, can provide administrators with the ability to control documents no matter where the document is being used or stored. Translated, that means he or she may control whether a user may open, print, copy and paste a given file, take a screenshot of it, or view it offline.

“You can set up our technology so that users are allowed or not allowed to access documents offline and for how long,” Banda says. “For example, an executive who is taking a cross-country plane trip and so is without online access for periods of time can have the document set up to be usable offline for a three-day period and be prevented from repurposing the document. It’s just another right to be set up, and [our solutions] are completely consistent whether online or offline.”

In addition, SealedMedia’s solutions provide admins with the right to revoke access to a document even when a user is actively viewing it. “We consider it a key value proposition to have this real-time functionality,” says Banda. “People either have the sentiment that it’s hard to believe or didn’t know this technology even existed.”

How It Works

SealedMedia’s solution is client-server in nature. Its server component is an ordinary Web server, which can be a dedicated machine, depending on the user’s needs. The software running the server classifies content by user and degree of access.

Meanwhile, its client component requires software to be installed on every client machine. According to Banda, the client piece of software is an architectural fundamental of E-DRM solutions, a key piece in the same way a PDF document needs Adobe Reader to be accessed.

Once installed, SealedMedia’s solutions integrate directly with native applications.

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Open Source Gaining Corporate Acceptance

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Wireshark (packet sniffer, formerly known as Ethereal), there are emerging tools to help manage other network functions as well.

Network management. Data centers need to keep an eye on network resources and be able to monitor and manage them. Many companies rely on commercial packages such as HP OpenView or IBM Tivoli NetView. However, the open-source community provides a number of very robust options as well. Products such as Nagios (www.nagios.org) and

OpenNMS (www.opennms.org) provide enterprise-class network management solutions to meet the needs of most data centers.

Backup management. Competing with products such as CA BrightStor, open-source tools such as Amanda (www.amanda.org) provide a cost-conscious alternative to managing backup and recovery in an enterprise. A recent startup called Zmanda (www.zmanda.com) markets a commercially packaged version of Amanda, with training and documentation, providing a cost savings

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over commercial products but with some of the bells and whistles traditionally missing from open-source products.

CRM (customer relationship management). Managing and maintaining customer relationships is a key component for any successful business. Products such as Siebel CRM or PeopleSoft CRM (both owned by Oracle now) or Salesforce.com Enterprise Edition are widely used for this purpose. But cost-conscious small to mid-sized enterprises that can't handle the investment in products such as those can turn to open-source solutions such as SugarCRM (www.sugarcrm.com), a commercial open-source package with most of the same power and functionality for a fraction of the cost.

Telephony. Along with telephony solutions from Avaya, Lucent, and other commercial providers, companies can also take a look at open-source packages such as Asterisk (www.asterisk.org). Asterisk has seen significant growth and media attention, but there are also other open-source telephony packages such as Pingtel SIP-xchange ECS (www.pingtel.com), and Signate Telephony Server 5000 (www.signate.com).

Content management. Solutions such as PowerCMS or Microsoft SharePoint Portal Server can cost thousands of dollars. SMEs may want to look at open-source content management solutions such as Drupal (drupal.org), Mambo (www.mamboserver.com), or PHP-Nuke (phpnuke.org).

Caveats & Pitfalls

While training, documentation, support, and other factors may be missing from many open-source products, this alone should not rule them out. When the software itself is free, it leaves more budget to contract out for these things or develop them in-house. Some bells and whistles may be missing, but because it is open source, you also have the opportunity to develop and implement any bell or whistle you choose, not just the ones the vendor wants to include.

The bottom line, says Ben Rothke, author of "Computer Security: 20 Things Every Employee Should Know," is to "treat open source exactly the same way as you would for a commercial product." □

Enterprise Digital Rights Management

Continued from Page 29

Someone creating a Microsoft Word file will find a toolbar that enables him or her to create a "sealed" document and also may have premade templates that incorporate sealed configurations that address various compliance and security issues. Administrators may also set up SealedMedia's software to automatically seal a given hot folder or project on the network so that employees do not have to be burdened with "doing the right thing," Banda explains.

Drivers Of Success

For his part, Jupiter Research senior analyst Peter Sargent believes that other

capabilities beyond the basic security E-DRM solutions offer will ultimately drive the success of the E-DRM space.

The ability to track a document's life cycles within an organization—in other words, who has had access to it, the ways in which it has been implemented, and for how long—is one. Another is version control, so that if a PDF showing a company's price list has changed, the old price list can either be recalled or made invalid.

According to Sargent, there are many players in this market: large companies, such as Microsoft, Adobe, and EMC, which recently acquired SealedMedia competitor Authentica; smaller ones that have forged

Getting End Users On Board

SealedMedia's Keith Banda says that failing to acknowledge an end user's experience with E-DRM (Enterprise Digital Rights Management) solutions can lead to outrage and resistance toward them. To alleviate reluctance on the part of end users, Banda says the product must integrate with other applications seamlessly so that it is invisible enough not to get in people's ways.

Moreover, client-side E-DRM software needs to show tact when handling a situation such as pulling back rights from a received "sealed" document. SealedMedia software instead redirects the end user to a help or status page that explains what happened, the person responsible for revoking document rights if the end user believes they were rescinded inappropriately, and a separate contact if the problem in accessing the document is due to a technical difficulty.

"You can't just get a box saying, 'You have no rights.' People would freak out," says Banda.

this niche such as Authentica, SealedMedia, and Liquid Machines; and others that are not specifically E-DRM companies but that offer basic solutions for smaller businesses, such as Mirapoint and Workshare, both of which hail from an email and document-security perspective.

At the same time, Sargent says that companies such as SealedMedia and Liquid Machines have pushed this market along and have offered such innovative features as backfitting their applications to earlier versions of Microsoft Windows and Office. □

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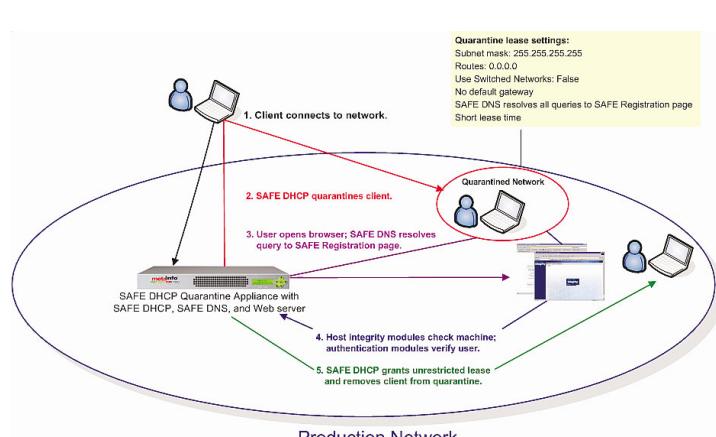
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WHAT'S HAPPENING

Filling The Server-Storage Performance Gap

Gear6 Tackles Storage Acceleration

by Chris A. MacKinnon

• • •

ENTERPRISES TODAY are facing a large and growing gap between increasing server processing capabilities and the constrained nature of disk-based storage (which cannot serve data quickly enough). According to Gary Orenstein, spokesperson for California-based storage acceleration firm Gear6 (www.gear6.com), this concept is called the "Server-Storage Performance Gap."

Orenstein says this imbalance of faster processing and slower data delivery represents a growing bottleneck that severely limits overall data center performance. He says, "As disk technology moves forward with greater density on the same conventional mechanical platforms, the problem only gets worse. As a result, IT administrators and managers typically experience troublesome scenarios."

Some of these scenarios include the inability to sustain operations through peak loads, which places business at risk, and valuable IT resources deployed simply to sustain acceptable performance levels. Continuous troubleshooting and maintenance, which causes interruptions in business, and premature infrastructure upgrades that lead to excessive capital spending can also cause problems in the enterprise. Orenstein says the gap between server and storage performance affects a broad set of commercial applications and industries.

He says the industry has adopted an "add more disks" approach, but that falls short of addressing the escalating issue. He adds that Gear6 has a complete solution that provides scalable and transparent acceleration to existing storage infrastructure.

Saturated

Orenstein believes that there is too much overprovisioning occurring in today's storage acceleration industry. He says, "First,

let's define storage acceleration, which we see as taking the fastest storage systems available today that are still bottlenecked and making them go faster. The emphasis here is on existing infrastructure because most IT departments have no interest in changing their storage foundation or managing another layer of storage equipment that requires time, effort, and dollars." He says the fastest storage systems today typically involve the use of massive disk overprovisioning, resulting in far more capacity than is actually required to accomplish the task at hand.

According to Orenstein, overprovisioning occurs at both the disk level and the system level with techniques such as parallel file systems. In both cases, he notes, the end result is an attempt to achieve more overall throughput from hard disk drives. He notes, "When IT departments have the fastest systems available, little room exists to expand on the performance capabilities. There are some methods to boost disk drive performance. These methods are so entrenched in storage and data center thinking that we almost take them as conventional wisdom."

Orenstein says some of the methods that enterprises use to increase disk performance include: RAID 0 (striping data across multiple disks to increase the overall bandwidth of the storage system), short stroking (placing data only on the outer section of disk platters to reduce the seek time of the mechanical heads), thin provisioning (using virtual volumes to constrain data to small areas of a physical disk), parallel file systems (linking hundreds or thousands of individual disk spindles to increase system throughput), virtualization (a more sophisticated extension of RAID 0), and faster drives (at least 15,000rpm).

"All of the above methods," Orenstein says, "are ultimately constrained by mechanical disk latency and require deploying additional mechanical infrastructure for improvement. This leads to higher costs of

adding storage and drives, greater requirements in space, power, and cooling."

Other Challenges

The industry also faces two large challenges for storage acceleration: instant data access (response times) and servicing multiple requests (parallelism). Orenstein says today's solutions address improvements in data throughput, but they do not provide instant data access because they rely on slower mechanical disks. He says no amount of overprovisioning can solve this problem.

In addition to providing instant data access, Orenstein says solutions must be capable of handling multiple requests simultaneously, or in parallel, in order to avoid queuing issues. This parallelism prevents multiple I/O requests from queuing up and adding significant delays to individual transactions. He says Gear6 is developing

much larger view focused on all mainstream applications where broad acceleration can be achieved with a solution that targets the biggest gap—the performance delta between servers and CPU power, and lagging storage devices."

Orenstein points out that by targeting storage acceleration, IT departments can achieve simple and transparent acceleration for a variety of applications and databases without having to spend time working on each area individually. He says Gear6 has taken an approach that complements existing storage infrastructure and does not require a change out of any existing equipment. This is critical to data center and IT managers looking to protect their existing investment and minimize unnecessary infrastructure upgrades.

He adds, "The Gear6 solution is based on scalable and transparent acceleration. That means solutions can scale easily and transparently complement existing infrastructure. This is a unique approach in the industry."

Orenstein comments on Gear6's immediate horizons: "We are very focused on highlighting the need for storage acceleration in a variety of specific application environments like databases, electronic design automation, software development, and other areas that require both high data throughput and instant data access. It is important for IT and storage managers to understand that they need solutions that complement their existing infrastructure and provide improvements in both data throughput and instant data access."

He says most people today are promoting the addition of disk spindles either through parallel file systems or storage virtualization. "While these solutions can help in terms of data throughput (bandwidth), they do not improve time of data access (latency) because these solutions still rely on mechanical disks." **P**



solutions that will dramatically improve the performance of existing storage technology by delivering instant data access and the ability to handle multiple requests simultaneously.

Orenstein says people handle general acceleration requirements differently today. He says several options exist to improve the performance of specific applications with a combination of hardware and software solutions. However, each of these approaches takes a silo-centric view of problem solving, addressing the needs of a specific application with a targeted, pinpoint solution. He says, "Gear6 sees a

TWO TERMS



IdM (Identity Management)

What it is: IdM is not a specific technology but rather a combination of both technologies and administrative controls that determines the types of access that individual users have to various resources located on corporate networks, such as disk drives, applications, and even specific files. Through IdM, organizations are able to administer the creation and the use of digital identities. For example, when an employee quits, how are his access rights to company information eliminated?

Why you should care: IdM is important because unauthorized access to confidential data and information is becoming a primary security issue. How do organizations secure data such that it is impregnable, even when stolen? How do organizations prevent outside partners from gaining access to data they don't need to see but at the same time have the access they need to perform their duties?

Related products and manufacturers: These include RSA (Access Manager, Federated Identity Manager), IBM (Tivoli Identity Management), HP (Identity Management), and CA (eTrust).

XNS (eXtensible Name Service)

What it is: XNS leverages XML and Web agents to create a universal addressing system that may one day eliminate the need for multiple identifiers. Think of it as a portable Web address for a user or entity that goes wherever the individual goes. For example, a user can log on to multiple sites or use multiple applications using the same credentials. OASIS (the Organization for the Advancement of Structured Information Standards) is developing XNS standards within its XRI (eXtensible Resource Identifier) and XDI (XRI Data Interchange) initiatives.

Why you should care: XML is becoming the lingua franca of the new, automated, and fully commercialized Web. New Web apps will rely on seamless machine-to-machine communications to conduct transactions, and that can only happen with the use of XML to develop a common language via which applications will communicate. The XNS is a way to eliminate the complexity of managing multiple identities by providing a system for universal addressing.

Related products and manufacturers: These include Cordance and Neustar (i-name global registry) and AmSoft Systems (various XRI and identification technologies).

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We take an in-depth look at five smaller manufacturers we think are worthy of your attention. What products, technologies, and services are they working on to improve life in the data center? Find out next week.

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The ProCurve Switch by HP 4200vl Series: Consists of modular chassis that provide a flexible, cost-effective LAN solution as an alternative to stackables. These switches offer a proven chassis form factor with high quality and reliability in 1/100 and 10/100/1000 scalable solutions that integrate easily into any network. Plus a **lifetime warranty** on select Switches.



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Ethernet Switch

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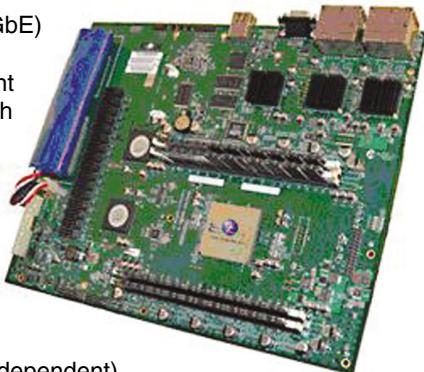
Manufacturer Presentation

End Nodes - Storage Advertisement

iStor GigaStorATX™

GigaStorATX is the Newest Generation iSCSI RAID Controller, providing the very best price/performance ratio and most feature-rich integrated iSCSI storage controller solution available in the marketplace. iStor Networks offers the GigaStorATX in a multiple port 1GbE and a single port 10GbE version. Both products are designed to conform to industry-standard ATX form factor specifications, allowing use of off-the-shelf PC Server and Storage chassis. The GigaStorATX allows OEMs, VARs, and System Integrators to offer competitively priced, performance orientated storage subsystems with an integrated storage firmware stack, lowering the cost of overall maintenance, providing greater ROI and increased customer satisfaction.

- RAID Levels 0,1,10 & Parity
- One 10GbE XFP pluggable iSCSI port (10GbE)
- Up to eight GbE iSCSI ports (GbE)
- Persistent and Adaptive Cache Management
- Up to 4GB Standard ECC DDR SDRAM with 72-hour Battery Backup
- VLAN-based Zoning
- Volume Virtualization
- Link Aggregation, Multipathing, and Load Balancing
- Support for up to 16 SATA devices
- IP SAN Device Manager
- Event notification via SMTP mail
- Enclosure Management Services (Chassis dependent)
- RAID level migration
- Online capacity expansion
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- Support of Windows, RedHat, SuSe, and MacOS
- Many more features—ask your iStor Sales Representative for the detailed list



GigaStorATX eliminates the need for Server or Motherboard Technology. The technologies from iStor Networks offer a complete iSCSI storage system-on-a-chip, coupled with an integrated storage virtualization firmware stack and SMI-S-compliant management suite.

Product Flexibility, Superior Price, and Best-in-class Performance with up to 1,160MBps cache read performance for faster business continuity and disaster recovery applications.



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Manufacturer Presentation

End Nodes - Storage Advertisement

UltraStor™ - IP SAN Storage System

Ultra Fast & Flexible Host Engine from Fibre Channel, iSCSI, and SCSI

RS 8 IP - 10/100/1000

RS 16 IP - 10/100/1000

**Enterprise RAID Performance**

The original UltraStor product line capitalized on Enhance Technology's hybrid storage expertise by combining SATA disk drives with either a SCSI or Fibre Channel host interface. The UltraStor IP utilizes newer, faster Serial ATA 3Gbps disks and is powered by the latest microprocessor to deliver up to 220MBps over a Gigabit Ethernet network, enough bandwidth to exceed the demanding requirements of many network-based applications. With UltraStor IP, Enhance has created a product that supports multiple hosts and runs on both the Windows and Mac OS platforms while offering easy configuration and integration into virtually any hardware or software environment.

Key Features Include:

- Hybrid Serial ATA disk-based storage, compatible 1.5 and 3Gbps disks
- Embedded hardware RAID controller with dual GbE ports
- 2U or 3U modular rack design easily integrates into existing storage infrastructures
- 2 GbE full iSCSI offload with load-balancing and failover
- One logic volume shared by as many as 16 hosts
- Windows VDS/VSS/MPIO support, host access control, and CHAP
- Easy LCD control, Remote monitoring, and RAID management over TCP

Full iSCSI Benefits

The UltraStor IP system has dual GbE ports, supporting full iSCSI offload with load-balancing and failover and one logic volume shared by as many as 16 hosts. Other new features introduced in the UltraStor IP system include MPIO support, S.M.A.R.T. disk monitoring, target authorization via IP address, and Jumbo frame support.

UltraStor Product Availability and Host Flexibility

UltraStor IP is available for immediate delivery in the form of a 2U eight-disk RS8 IP model, which has the storage options of 1TB, 2TB, or 4TB; the 3U 16 RS16 IP model can go up to 8TB.



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KVMwww.Processor.com/i-Tech75

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- Optional KVM Switch Functions



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- PC or multiplatform (PC/Unix, Sun, Apple, others)
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- USA manufacturer of a variety of rack mount products



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Manufacturer Presentation

End Nodes - Storage Advertisement

Introducing the New AccuNAS Series



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Featuring RAID 6 and also 0, 1, 0+1, 3, 5 and JBOD 4, 8, 12, 16, 24ports, Intel I/O Processor, DDR Memory Online RAID Level/Stripe Size migrations, Online RAID Capacity expansion and RAID level migration simultaneously, NCQ and Staggered Spin-up Support, Battery Backup ready, I2C, Full OS Support.

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- Automatic insertion/removal detection & rebuilding.
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Case

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- Dual Intel Xeon processors up to 3.06GHz
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- Up to 8GB ECC Reg. DDR 266 SDRAM
- 1 8x AGP Pro 1.5V slot
- 2 64-bit PCI/X 66/133, 2 32-bit PCI
- Dual Gigabit LAN Ports
- 12" x 9.8" ATX form factor



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Manufacturer Presentation

End Nodes - Components Advertisement

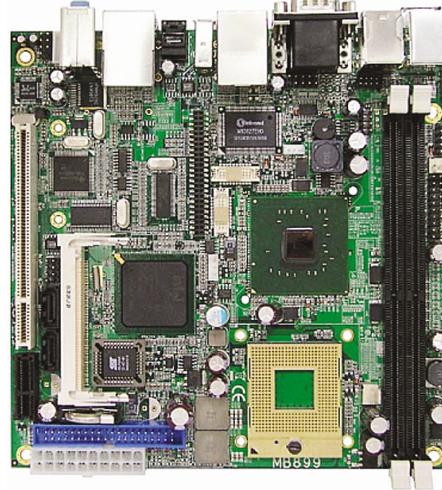
Based On Intel® Core™ Duo Processor & Mobile Intel® 945GM Express Chipset Embedded Motherboard—MB899

The MB899, a Mini-ITX motherboard, supports the latest Intel® Core™ Duo processor and the Mobile Intel® 945BM Express chipset. The latest Intel® Core™ Duo processors give you the competitive edge in the ever-growing embedded market. The Mobile Intel® 945GM Express chipset provides greater flexibility for developers of embedded applications by offering improved graphics and increased I/O bandwidth.

This new embedded motherboard offers intelligent power management capability and greater performance per watt, which enhances the end-user experience for medical, multimedia, industrial automation and gaming applications.

MB899 Features:

- Intel® Core™ Duo processor
- Mobile Intel® 945BM Express chipset
- Two DDR2 DIMM Sockets
- Supports CRT, LVDS, optional TV out or DVI
- 10/100BaseT LAN, PCI Express Gigabit LAN
- SATA x2, USB x6, Digital I/O, Watchdog timer
- PCI x1, PCI-E (x1) x1, Mini PCI x1, optional Mini PCIe x1



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Manufacturer Presentation

End Nodes - Storage Advertisement

SuperTrak EX16350/EX16300 16-Port SATA 3Gbps RAID Controller

From Promise Technology

SuperTrak EX16350/EX16300 highlights:

- 16-port SATA 3Gbps advanced RAID controllers
- Intel IOP 333 (EX16350)/331 (EX16300) processor
- RAID support 0, 1, 5, 6, 10, 50
- PCIe (EX16350) and PCI-X (EX16300) host bus interfaces
- Web-based WebPAM™ management software
- Linux open source driver available
- 256MB onboard cache
- Dual controller support
- Optional battery backup module available



The SuperTrak EX16350 and EX16300 from Promise Technology are Intel IOP-based RAID 6 controllers that combine high performance with unbeatable prices. The SuperTrak EX16350/16300 controllers include Promise advanced RAID features such as multiple logical drive support, media patrol, and bad sector remapping for maximum data protection and management.

The SuperTrak series is designed to fulfill the needs of SIs and OEMs with demanding data storage requirements. The SuperTrak controllers deliver exceptional multi-drive performance by taking advantage of Intel's XScale IOP processor technology to offer the ultimate RAID 6 protection for high-level fault tolerance, allowing multiple simultaneous drive failures without downtime or data loss so your data is always protected.

For More Information: www.Processor.com/Promise

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Manufacturer Presentation

End Nodes - Data Collection Advertisement

Falcon® 4400 Series Windows®-Based Mobile Computers

The Falcon 4400 Series is an ergonomic mobile computer designed for use throughout the supply chain. User-friendly keypads, an audible beeper, and maximized color display complement industry-leading durability.



Technology Features Include:

- Windows® CE or Windows Mobile® operating systems
- 802.11b or 802.11g wireless data communications
- An Intel XScale microprocessor
- Standard, long, and advanced long range engines
- Linear and 2D imager options tailor fit the Falcon 4400 Series to the application

The Falcon Desktop and Management Utilities make the Falcon 4400 Series effortless to deploy and manage. Creative developers can leverage application development tools to further customize units for specific applications.

Three service programs, ranging from a five-business-day repair to an overnight replacement, keep your systems at peak working condition and productivity high. PSC's consulting services are available to help architect, integrate, deploy, and manage mobile wireless systems into your environment, on-time and within budget. Deployment project managers lead the wireless network design, site surveys, staging, image loading, cabling, and installation activities.

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Manufacturer Presentation

End Nodes - Storage Advertisement

SuperTrak EX16350/EX16300 16-Port SATA 3Gbps RAID Controller

From Promise Technology

SuperTrak EX16350/EX16300 highlights:

- 16-port SATA 3Gbps advanced RAID controllers
- Intel IOP 333 (EX16350)/331 (EX16300) processor
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Attention
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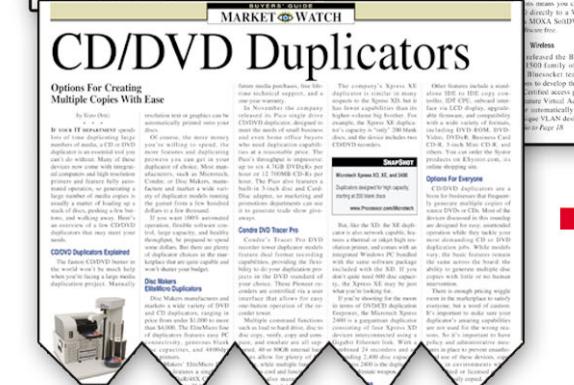
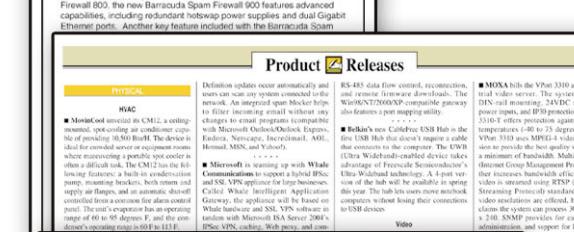
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Manufacturer Presentation

End Nodes - Storage Advertisement

Accusys InneRAID™ ACS-75190/75191 PATA RAID 1 Box

The ACS-75190/ACS-75191 RAID box is an excellent solution of protecting data and improving system availability for industrial computing and communication platforms. It performs block-level data mirroring to protect data of all types and of any operating systems. It also seeks to secure every bit of your data while streamlines the IO access serving by its intelligent DriveRectifier™ technology.

Connectivity

- ACS-75190: SCSI-PATA
- ACS-75191: PATA-PATA
- ACS-75192: SATA-SATA

Features

- Hardware-accelerated RAID 1 (mirroring)
- Support 2.5" PATA notebook disks
- Driverless: need no driver on host side
- Hot swappable hard disks
- Automatically on-line data rebuilding
- On-line bad sector recovery
- Key lock against unauthorized access
- LED indicators for disk status display

www.Processor.com/Accusys



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Form factor

- Two 3U compact PCI slots or one 5.25" full-height drive bay

DriveRectifier™ Technology

- Assured Real-Time Non-Stop availability with High Performance
- Online drive traveling and array roaming
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TRAVELSTAR	2.5" & 1.8"	4200, 5400, 7200	20,40,60,80,100,120 GB	ATA, SATA, Enhance
ULTRASTAR	3.5"	10K, 15K RPM	36,73,147,300 GB	SCSI (68, 80pin), SAS, FC
MICRODRIVE	1.0"	3600 RPM	6,8 GB	ZIF, ATA

MICROLAND
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More information: www.microlandusa.com
Call: 1-800-632-1688 to speak with a Microland Sales Representative

California Headquarters

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San Jose, CA
408-441-1688

Texas Branch Office

3724 Arapaho Rd.
Addison, TX
972-484-7515

Manufacturer Presentation

End Nodes - Printer Advertisement

High-Definition Line Matrix Printer For Windows-Based Applications

The new P7000HD Series prints True Type™ fonts, logos, and bar codes accurately, giving users a cost-effective and highly reliable alternative to the laser printing of reports, bills of laden, forms, and labels.

Created as a cost-effective alternative to Windows™-based laser printing applications, the new P7000HD series is optimized for graphics printing demanding the highest reliability. It is the only line-matrix printer available in the market today that can operate seamlessly in a Windows environment and emulate all of the fine details required for TrueType fonts, fine print, logos, and bar codes.

Printronix designed the P7000HD for applications typically found in manufacturing, banking, distribution, and transportation environments, such as the printing of reports, bills of laden, multipart forms and bar-code labels. The P7000HD features 11-mil (0.28mm), fine-point hammer tips that print at least 180 x 180 dots per inch (dpi). This resolution rivals the print quality of laser printers at a fraction of the operating cost.

- High-Definition print image – 180 x 180 dpi and fine tip hammers
- High quality rendering of complex fonts, small point sizes, lines, logos, bar codes, and PDF files
- Direct drop-in replacement for Windows-driven laser printers
- P7000 Ultra Capacity HD ribbon – Extra long life with darker sharper print
- Integrated Print Management – total visibility and control of image quality and consumables
- Low cost of operation – typically 10x lower than laser or serial matrix
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Manufacturer Presentation

End Nodes - Storage Advertisement

Rapid Recovery Appliance Making IT Disasters Insignificant Events

The dpu 2000 is an entry-level rack-mount model designed for small to medium size networks. The dpu 2000 provides users with both high-speed, disk-based backup and Rapid Recovery and includes support for disk or tape archiving. Support for true off-site data protection in conjunction with a Data Protection Vault is also included.



DPU 2000 Features:

- 2U Rack-Mount Form Factor.
- Ideal for users with 50GB to 1TB of user data.
- Backup and Rapid Recovery services in easy-to-use GUI.
- Hot Bare Metal™ restore for most OS environments.
- Front panel display for status and activity monitoring.
- Intel P4 Processor.
- Disk and tape archiving support included.
- 6 Drive Bays - RAID or Hot Swap configuration.
- Gigabit Ethernet.
- Supports DPSA for additional storage.
- RX9 compression co-processor option.

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Enterprise NAS

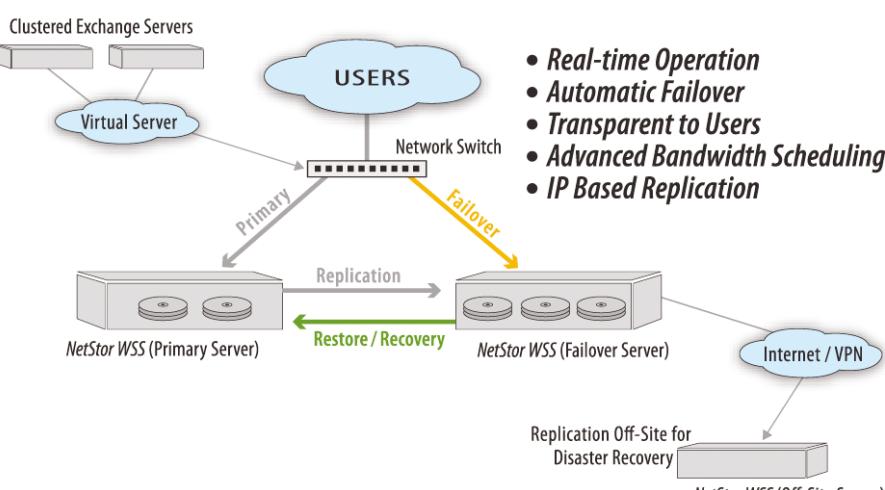


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Manufacturer Presentation

End Nodes - Printer Advertisement

Multifunction Printer

For users who are interested in purchasing a new MFP but also have extensive finishing requirements, Lexmark offers the new **Lexmark X646ef** laser printer bundle, which includes the new 4600 scanner, a T644dtn laser printer, and finishing capabilities such as stapling and sorting at an estimated street price of **\$4,449**.

The Lexmark X646ef is the first MFP in its class to feature a standard scan preview function to allow users to view a scanned document before it is processed. It is also the first MFP in its class to feature a USB port to allow users to scan to or print PDFs and images from a USB flash storage device directly from the operating panel. The Lexmark X646ef is the only MFP in its class with a color touchscreen interface and offers the fastest print speed in its class at up to 50ppm.



800-LEXMARK

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LEXMARK™

Manufacturer Presentation

End Nodes - Storage Advertisement

New DataPort 25 'Mobile & Secure' Removable 2.5-inch Drive Enclosures

The **DataPort 25** makes 2.5-inch hard drives removable from any standard 3.5-inch bay such as the floppy bay in PCs and servers, making it ideal for data backup, data transporting and archiving, or applications such as mobile computing and surveillance.



New **DataPort 25 'Mobile & Secure' Drive Carriers** combine the benefits of both removable drives and rugged external storage devices. Operating at full transfer rates while in the bay, the new carriers also allow users the versatility to take their data elsewhere and access via USB or FireWire without the tether of a power cord. Optional encryption provides ultimate data security.

CRU-DataPort offers several removable drive carriers to choose from and a universal frame that supports them all:

Standard Carriers accommodate two PATA or SATA drives to double capacity or create a palm-sized RAID for data integrity or improved performance.

USB or a combination of USB & FireWire are available for ultimate flexibility in remote data access.

Add hardware-based full disk encryption for real-time encryption of the entire disk contents while using no system resources.

- Drive Carriers lock into frame for security
- LEDs indicate drive activity, power-on status, and system errors
- Heavy-duty stainless steel construction
- 25,000 insertion-rated connectors



Contact CRU-DataPort
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www.Processor.com/CRU-DataPort15

Manufacturer Presentation

End Nodes - Printer Advertisement

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Erase Hard Drives In Just 5 Seconds With The V660 HDD Evo

Verity Systems the world's leading developer and manufacturer of degaussers and bulk tape erasers. The company's new V660 HDD Evo is a unique, infrared-controlled degausser designed for the permanent and safe erasure of hard drives.

A degausser erases media by applying a strong magnetic field that destroys all information recorded on the media. While in most cases this will render the hard drive inoperative, the cost of a replacement hard drive cannot be compared to the cost to a company if sensitive information can be read by a third party. The V660 HDD Evo has a very powerful, concentrated magnetic field that ensures that hard drives are erased in just 5 seconds.



Verity Systems Inc.
5441 Merchant Circle, Unit A
Placerville, CA 95667
Toll Free: (800) 642-5151
Phone: (530) 626-9363
Fax: (530) 626-9395

Operation is simple. Hard drives are placed into the V660's receptacle, the lid is closed, and the degauss button pressed. What's more, with safety in mind, the V660 HDD Evo is the only hard drive degausser that can also be operated remotely via an infrared control from a distance of up to 15 meters. For added security, the V660 can be locked in the infrared operating position so that unauthorized usage cannot take place.

Key Features:

- Effectively erases hard drives
- No need for operator to handle drive during degaussing
- 5-second erase cycle
- Remote control, operation from up to 15 meters
- High energy for complete erasure
- Tabletop design
- Cost-effective

www.Processor.com/VeritySystems51

Manufacturer Presentation

End Nodes- Server Appliance Advertisement

Mail Foundry 1150 - Antispam Appliance Designed For The SME

The MailFoundry 1150 antispam appliance blocks 100% of known spam and viruses with the lowest false-positive rate in the industry of less than 1 in 1,000,000. MailFoundry has a team of human editors who create Spam Profiles around the clock, designed to block specific spam without creating false positives. These updates are automatically distributed to MailFoundry appliances worldwide every five minutes and immediately applied to defeat spam outbreaks as they happen.

MailFoundry has developed its own filtering engine, known as MessageIQ, which runs on a PC-like platform with a hardened Linux OS. And while the entry-level 1150 is not designed for rack-mounting, it is compact enough to be unobtrusive. The MessageIQ engine is a multilayer filter, incorporating traditional techniques such as blocked senders, real-time blackhole lists, and reverse DNS lookup and adds what MailFoundry terms spam profiles—custom-built, targeted message identifiers. These human-crafted profiles are similar to virus signa-

tures in that they don't rely on brute force checksums, hashes, or lexical analysis but are based on repeatable message attributes used by particular spammers.

- For up to 150 users
- MessageIQ antispam/antivirus engine
- Desktop or shelf-mount chassis
- 12" (305mm) x 2.1" (54mm) x 11" (279mm)
- Outbound email scanning
- Easy-to-use Web admin interface
- 90-day hardware warranty
- M-F telephone support (7 a.m. to 8 p.m. CST)

The MailFoundry 1150 is available for \$799 with a yearly subscription cost of \$99 for up to 150 users and can be ordered online at www.Processor.com/Mail or by calling 1-888-302-6245.



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If you're a manufacturer, reseller, or dealer and want to get your message out to thousands of qualified data center and IT professionals each week, check out the online Media Kit or enter your contact information to have one of our advertising reps contact you.

The Processor.com website features a clean, modern design with a dark header and light blue sidebar. The main content area includes sections for 'Processor SHOWCASE', 'Cover Articles', 'Latest Added: Products For Sale', 'Dealer For-Sale Listings - Used, New, Refurbished', and 'Industry Jobs'. Each section contains links to specific products or services, such as 'Network Surveillance Server' or 'Toshiba THMY7232F0EG-80'. The site also includes a search bar and a 'Register' link in the top right.

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You can browse and search our site without registering, but to take advantage of certain features, you'll want to register (if you don't want to register right away, the site prompts you when you need to register). Provide some basic information, answer a few questions, and select a password, and you're ready to go. If you already have a username and password, you can go right to the Log In link (if a welcome message appears, you're already logged in).

Processor Showcase

You should be familiar with the print edition of our Showcase advertising section—it's the section beginning on page 5 of this issue that displays dozens of products of interest to data center and IT professionals. Now there's an electronic counterpart with hundreds more products we can't fit in print.

If you know the specific manufacturer or advertiser you're looking for, click Browse By Advertiser. If you're looking to see if a solution exists, click one of the By Category links (either graphics-based or text-based) or the Word/Phrase Search link.

The Word/Phrase Search is the quickest route but choose your keywords wisely to ensure you get the best results.

If you choose the graphics-based browse option, you'll see instructions on how to use the browsing feature. Pass your cursor over one of the five color-coded categories near the top of the page (Physical Infrastructure, Communications, End Nodes, Software, or Services) then choose the category or subcategory you want and click it. A list of links appears in the left window; pass your cursor over the links, and the product ad displays in the right window. Once you've found a product of interest, click the red More link in the bottom right of the ad for more detailed information.

Cover Articles

Link right to the two cover articles from the most recent issue, view the current issue's electronic table of contents with links to all articles, view the current issue as a PDF, or search past issues. When searching past issues, you can either perform a keyword search or see a list of all issues or all articles in the archive. Every article we've written is archived on the site, and most issues have a PDF version available.



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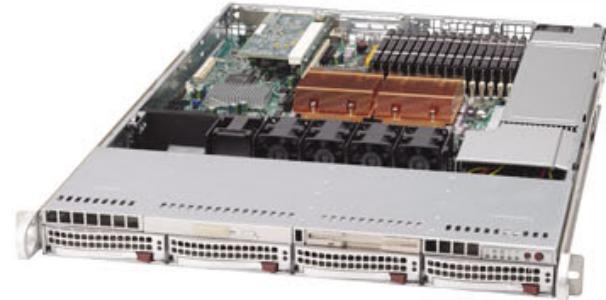
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